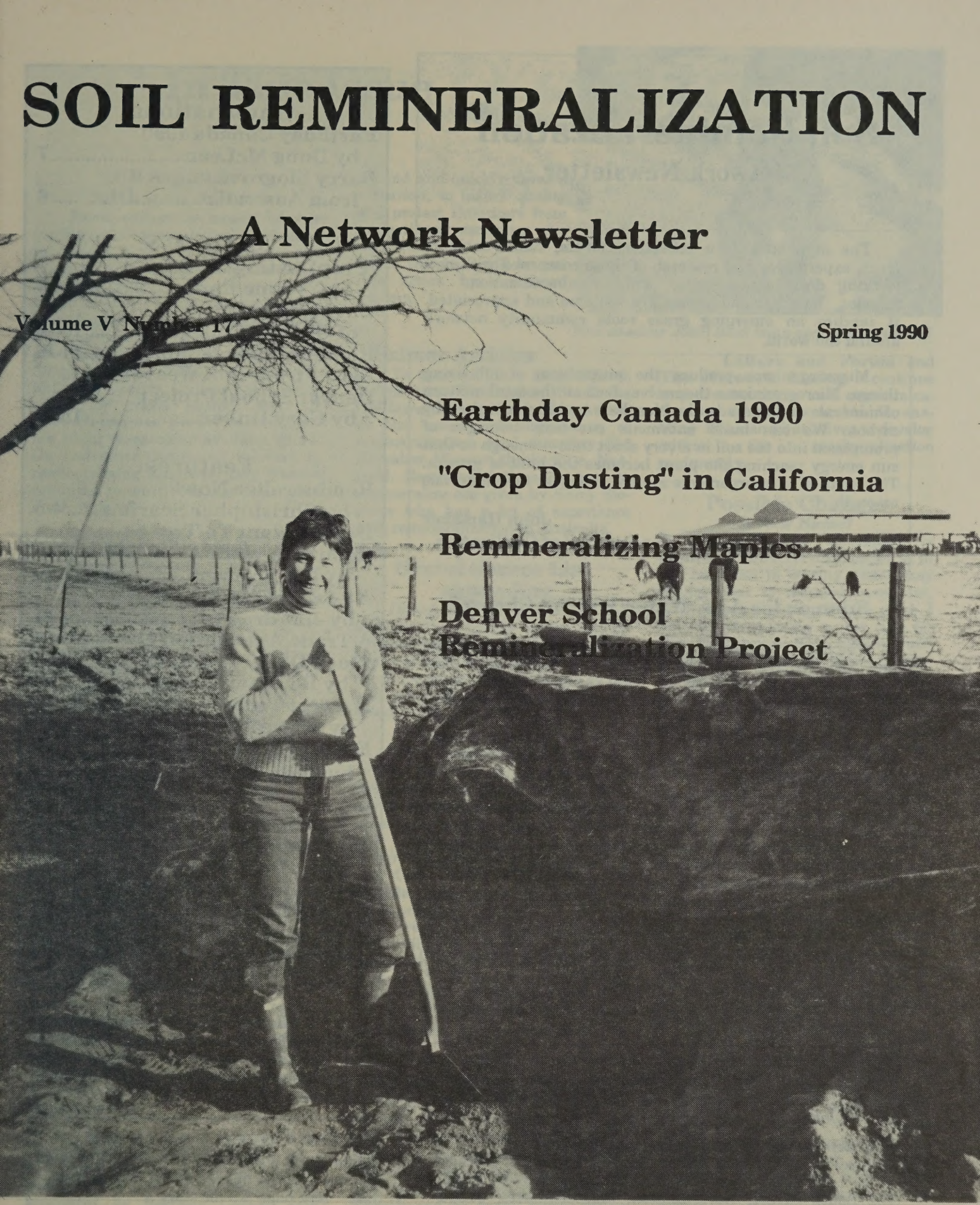
SOIL REMINERALIZATION

A Network Newsletter

Volume V Number 17

Spring 1990



Earthday Canada 1990

"Crop Dusting" in California

Remineralizing Maples

Denver School Remineralization Project

Regeneration of soils and forests with finely ground mixed gravel rock dust

Soil Remineralization

A Network Newsletter

The newsletter is a reflection, forum, round table of ideas, experiences and research of those concerned with networking and implementing soil remineralization. Articles, letters, and photos are welcome and appreciated. It reaches an emerging grass roots community network around the world.

Microorganisms produce the protoplasm of all living things. Microorganisms themselves feed on the total mixture of minerals and gases in the biosphere and are energized by carbon. We can build enormous per acre tonnages of protoplasm into the soil in a very short time— enough so that sun energy reaching the plant becomes the limit of growth. The foods of microorganisms are the cheapest raw materials on earth.

John Hamaker
The Survival of Civilization

Eden or Ice Age– Which Will We Choose?

The book *The Survival of Civilization* by John Hamaker and Don Weaver is regarded by a growing movement worldwide as a blueprint for the survival of the earth, restoring ecological balance and, perhaps, even recreating Eden.

The remineralization of forests, farms, orchards and gardens with glacial gravel and rock dust is nature's way to regenerate and fertilize soils. During an ice age, as glaciers grind rock to a fine dust over millennia, a fertile soil is created. Adding finely ground gravel dust is a tremendous boost to organic agriculture and can make it truly viable by adding up to a hundred trace minerals and elements needed by all life and by nourishing the microorganisms in the soil, whose protoplasm is the basis of all living things.

There is evidence to suggest that as forests begin to die off worldwide, giving off carbon dioxide, the climate of the earth is altered, triggering the transition from the warm interglacial to an ice age. We are hastening this process with the burning of fossil fuels. Undertaking the task of remineralization is urgent to restore our agricultural soils and to save the dying forests in the temperate latitudes and stabilize our climate.

Publisher,editor and format: *Joanna Campe* ◆**Associate Editor:** *Janet Scott* ◆**Contributors:** *Davina Colvin, Don Weaver, David H. Miller, Jan Brewer, Bertram Cohen,, Steven Johnson.*

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The Survival of Civilization ($12.00) and ***The Solar or Ice Age? Bulletin*** ($5.00 donation) can be ordered from Hamaker-Weaver Publishers, P.O. Box 1961, Burlingame, CA 94010

On the Cover: Yvonne Rado of **Rado Rock** showing off the relatively small amount of space needed for 24 tons of rock dust. **See** page 8-9 for story

In This Issue

New co-editor Janet Scott in an appropriate setting!

SR expands with new editors

Please excuse the month delay in getting out the newsletter! Good news to insure that ***SR*** continues and expands in the future- - the newsletter welcomes new contributing editor Janet Scott of Hadley, Massachusetts. A local subscriber for the last few years she has become co-editor, along with great assistance from Davina Colvin in Santa Monica, California. David H. Miller of Oberlin College has become editor for gravel sources and ***SR*** research and Jan Brewer is contributing editor researching available grinders and other equipment relevant to remineralizing activities. Don Weaver continues to contribute inspiration and much support.

Earthday 1990

Earthday Canada 1990 has made a tremendous impact with its emphasis on remineralization there and many exciting projects too numerous to mention here, but including the planting and remineralizing of 100,000 trees by the Boy Scouts. Through the urgent and inspired action of Don Weaver, 1400 fruit and nut trees were saved, planted and remineralized by school children. And in Denver a high school research project is being designed for remineralization trials by Dr. Tung Ming Lai of the U.S. Geological Survey. This was organized by Gary Huber and with special thanks to Jack Miller for his conception of the project.

Saving Maples

The editor addressed 200 maple growers in January, 30 growers are eager to try out remineralization. The town of New Salem, Massachusetts is beginning with a commitment from growers there to remineralize in the near future. Those present at a remineralization demonstration included a Christmas Tree Farm and apple orchard as well. Advice specifically to maple growers on remineralization and a specific rock/gravel sources list can be found inside.

A Trade Association

The formation of a *Trade Association for Rock Dust Producers* has been suggested by Bertram Cohen. This seems very important if we are to expand and quickly develop a market, to insure quality and protect Producers from competitors such as the chemical industry. It is hoped this idea will be put into action by concerned readers.

Primer Articles

To start off this issue British nutritionist Christopher Scarfe in *Remineralization Now!* takes a look at the nutritional importance of remineralization and describes the Hamaker Weaver thesis in a Nutshell. Recommendations on how to remineralize are given by Barry Slogrove who has a lot of experience with remineralization in Australia.

Gravel Source List expanding

David H. Miller of Oberlin College greatly expands gravel source information with gravel source listings available in 33 states and talks about his research experiences so far with some of the rock dust sources listed in the newsletter.

New Rock Grinders

In *Do You want to try Soil Remineralization?*, Jan Brewer gives advice on doing pot tests and mentions sources of small scale grinders and other equipment he has researched. There is a drawing for a Low Cost Impact Mill as seen in **Popular Mining** that can be constructed.

A really exciting development is the availability of a *mobile* grinder that looks perfect for those wanting to start a rock business on a small-medium scale. The grinder is available for $15-16,000, through Harvest Technologies Inc., Bruce Miller in Toronto.

Where did Azomite go?

For new subscribers reading ***Secrets of the Soil*** by Peter Tompkins and Christoper Bird asking where to get Azomite, there's good news. Two companies offer this rock dust from Utah. See the article on Elemite and the gravel source listing and ad for Peak Minerals.

Letters and Forum and **The Network Listing** continue major networking and communication among readers worldwide, enabling ideas and initiatives to develop within the remineralization community.

Possible Changes

A New Name?

Currently the newsletter is printed on 100% recycled paper as in the past and in coming issues may change over to recycled newsprint. Look for a new design for the cover. I am also considering a new title for this publication. ***Soil Remineralization*** may be a bit daunting for newcomers and for introducing remineralization to the world at large. If you are inspired to come up with a new name, please write me with your suggestions. I am open to new possibilities!

Also: we will begin a regular column which keeps up with climate change in brief. Send news and weather reports from your local newspapers and your own observations which add supportive evidence to the Hamaker thesis of global climate change.

I hope that many readers will fill out the Rock Dust Reference Form. This could provide invaluable information for remineralization efforts worldwide and provide us with results and experiences needed to expand our own knowledge.

While wishing to inspire readers to action in the most positive way possible it is important to acknowledge that we have a *long long way to go* to make a real difference in terms of climate change and the regeneration of forests and soils and the real urgency in bringing about real change in consciousness and in our actions.

Joanna Campe

REMINERALIZE NOW!

Mineral deficiency is undermining your health. Christopher Scarfe explains . . . .

Whether or not you get the minerals you need to support your health is dependant on many factors. At one end of the scale is the presence or absence of minerals in the soil, and at the other end of the scale is your biochemical individuality, which determines your specific need for nutrients. How to ensure that these two ends of the scale are working towards the common goal of your health is easy once you know how.

Man has exploited minerals since the very earliest signs of civilisation; iron for tools, gems for barter, uranium for weapons and zinc, copper and many others for industrial use. But these are crude applications of minerals compared to the delicate dance of minerals taking place in your billions of cells right now. Yet another quality of minerals is that they can lend their atomic energy to enzymes in our bodies and act as co-factors in the process of speeding up the chemical reactions that we call life. Without enzymes and the co-factors, these reactions would proceed too slowly for life to exist.

Minerals in the soil

How do they get there in the first place? The molten core of the earth is in a state of constant flow. It breaches the earth's crust and pours out lava across the sea floor. At the Mid-Atlantic Ridge, for example, magma is seeping out at a rate of about 4 cm per year. As the earth evolves, these sea floors are acted on by great pressures and are thrown up into mountain ranges. Once exposed, these mountains are eroded and their minerals are distributed across the land and become incorporated into soils. This continual process gives rise to the fluctuating shape and distribution of continents, their mountains and the life that they sustain.

From microbes to man

The next link in the chain involves tiny soil microbes that use the minerals to grow and multiply and so provide food for plants. Once grown, the plants are eaten by animals and by us. We may go further down the food chain by eating the animals that eat the plants. Either way, the minerals that the plants have taken up end up in our food.

Or do they? Food technology and intensive farming methods have reduced the mineral content of our food drastically in this century. Artificial fertilizers provide mostly nitrates which the plants do not need, and fail to provide the ninety or so vital minerals and elements that plants do need to grow properly. Pesticides and other chemicals further deplete the resources of the soil and reduce the availability of minerals for the plants.

Next we take these depleted plants and refine them. The problem is that our bodies are not accustomed to these refined substances, but do have a daily requirement for the vital nutrients that have been removed from the original foods. The resultant substance no longer has the ability to sustain life; it may be eaten and it may taste wonderful, but it is not food. Cooking food further depletes its mineral content as they leach out into cooking water or fat which is later discarded. More than 75% of the minerals in food can be lost in this way.

You are not what you eat. Fortunately this is true or we might all have ended up looking like hamburgers! You are what you can absorb. So this is the next limiting factor in the mineral story. Few minerals are absorbed at a rate better than 30% of total intake from food. For some trace elements like manganese we may only absorb 5% in the best digestive conditions.

Other factors that interfere with mineral absorption include low stomach acid levels, medicines, milk and stress.

Biochemical Individuality

Now that you have absorbed your minerals, have you got enough for your needs? For example, for some people the recommended daily allowance for zinc of 15mg per day (WHO figures) satisfies their needs. Many people that I treat in clinic need more

Minerals lost in refining flour

Calcium	**60.0%**
Phosphorus	**70.9%**
Magnesium	**84.7%**
Potassium	**77.0%**
Chromium	**98.0%**
Manganese	**85.8%**
Iron	**75.6%**
Zinc	**77.7%**
Selenium	**15.9%**
Molybdenum	**48.0%**

erage dietary intake of zinc in the UK is between 9mg and 11mg. This puts a lot of people at risk of deficiency.

Supplement yourself and your soil

There is no doubt now that poor farming methods have resulted in depleted and tired soil-- and depleted and tired human beings. It is one thing to supplement ourselves, but what about the soils that provide the plants we eat with their nutrients and hence us with ours?

The Gaia hypothesis

The Gaia Hypothesis was proposed more than twenty years ago by James Lovelock. It proposes that our planet is a self-regulating organism which, when in balance, is able to support the wonderful phenomenon called life. If this organism goes out of balance then it is capable of rectifying this with a range of different geological or meteorological mechanisms. If we draw the analogy between our planet organism and the human organism, the molten core of the earth is the heart and blood supply, the rocky crust is the skeleton, the continents are the vital organs and the soils are the tissues that perform the functions of life itself. The quality and health of the soil determines the continued health of the entire organism by providing the nutrients which life itself depends on.

Some scientists believe we are less than twenty years away from the next Ice Age.

There is now a large body of evidence to support the view that demineralization of soils has led to a demineralisation of our tissues and the subsequent plague of modern Western diseases. Demineralisation of the soil is also proposed as a major component in the process of the so called 'greenhouse effect' and the hastening of the next ice age. These two apparently unconnected processes are inter-dependent, and the question of the survival of our planet, species and each of us as individuals appears to lie in the presence or absence of small amounts of essential minerals in our soils.

Could minerals increase lifespan?

There is plenty of evidence across the world from Findhorn to the Karakorma mountains in the Himalayas where the Hunzas live, that plant and human life is directly related to the composition of the soil. There is indeed magic at work in Findhorn in Scotland--the magic of minerals deposited by glaciers thousands of years ago that are producing giant vegetables.

The Hunzas are known to live vigorously for up to 120 years, the vast majority of them topping the hundred mark, and they grow their food on soils full of crushed silicates deposited by ancient glaciers.

The problem of our failing planet and our collective failing health is by no means a simple one. There are many issues that need to be addressed, from aerosol sprays through food additives to deforestation, and we know that with our complex society these problems will take time to resolve. But by making one fundamental move to scatter crushed gravel dust across the depleted soils of this planet we have the power not only to stop the coming ice age, but to provide our fellow creatures and ourselves with adequate levels of the minerals essential for a healthy life.

(Reprinted from Eileen Moore, College of Soil Science in England, See Network List)

Common Signs of Zinc Deficiency

Acne
Premenstrual Syndrom
Mental & emotional problems
White marks on the nails
Infertility
Poor vision
Poor memory
Poor sense of taste or smell
Stretch marks
Poor hair condition
Poor growth in children
Allergies

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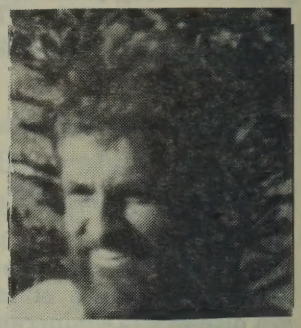
In A Nutshell

The coming ice age and how to stop it

John Hamaker has been researching and writing on this subject since the early 1960's. More and more scientists are beginning to believe that he has a point. His theory runs like this. Over the past million years or so of earth's history, there have been a series of ice ages punctuated by temperate period. The 100,000 year cycle is characterised by 90,000 years of ice age and 10,000 years of warm interglacial. During the glacial period the movement of the ice results in a crushing of the rocks of the earth's crust and, when the glaciers melt, a redistribution of essential minerals across the continents by winds. During the warm interglacial period the soils can support a growing number of microbes, which support increased plant life and subsequently animals and us. As this period progresses, so erosion leads to demineralisation of the soils; plants thrive less well and are less resistant to disease and forest fires and so decline. Therefore they use up less carbon dioxide and provide less oxygen. As the atmosphere starts to warm up at the equator, the temperature differential between the equator and the poles increases, resulting in fierce winds, hurricanes and storms. The increased moisture in the equatorial regions is carried by these winds towards the poles where it is deposited as snow and ice. As the snowy regions advance, less plants can survive and the next period of glaciation is brought on--the next ice age.

To arrest the progress of the coming ice age, perhaps indefinitely is very simple--remineralise the soils of the earth with gravel and other rock dusts so that they can support more trees. Gravel dust, which is what the glaciers take 90,000 years to grind up and redistribute across the earth, is cheap, readily available and has been shown to produce record crop yields and plants bursting with minerals and vitality.

Barry Slogrove from Australia
outlines his own method and recommendations for remineralizing soils



The outline which follows covers basically an agriculture based primarily on using ground igneous rock (preferable) with a balance of particle sizes suitable to achieve the desired results. One needs to study the following before deciding on the blend of ground rock and quantity to be applied.

Soil analysis

It is very important to have your soil analysed before you commence. Do not begin liming soil until you have first taken care of its fertility level. Applications of ground igneous rock dust or a mix of ground rock when igneous is not available, will in itself increase your pH. However, in the case of calcium deficient soil, you may still need to apply lime (possibly dolomite) in order to bring the calcium level to 65% to75% and your magnesium level to 12% to 15% of the base elements (base saturation percentage). As applies to crusher dust, the acidic and clay soils will need larger applications of coarser lime - coarser to ensure that you do not further reduce the aeration and drainage of a soil that may be already poor in these respects, and also because the more acid soils will etch out the necessary minerals required and at the same time provide a more balanced, longer period of mineral supply.

Procedure

1) First broadcast crusher dust as suggested in the following section, followed by whatever organic materials you intend to apply. Then incorporate well (where possible) by whatever means (plough, disc, etc.) you decide is best before attempting the following:

2) Have your soil analysed.

3) Decide whether you need lime or dolomite, and if you do, what type and quantity you have to apply to arrive at the above base element saturation percentage. As mentioned above, it is preferable to use a coarser grade of lime with clay or clay loam soils.

4) Spread the lime. Incorporate as with crusher dust and where possible, deep rip with a chisel plough to break up any pan, especially if a rotary tiller was used for incorporating.

In established orchards or gardens you will have to broadcast the lime and crusher dust on the ground, then apply all types of feeding in the following order after deciding on the quantities required.

1) Lime
2) Crusher dust
3) Compost - mulch

It would be preferable to take the same fraction of each and spread at various intervals, possibly half of each every 6 months. In the case of lime, it may not be necessary again for at least two to three years after these first two applications. When possible, the crusher dust would be best incorporated into the compost as you make it.

Matching available and desirable crusher dust grades to soil types

The guidelines below cover all ground rock, whether it be igneous, limestone, phosphate, dolomite, glauconite, or whatever.

Very Fine Grade Rock Dust - 50% to 100% minus 200 Mesh.

For use on sandy soil where there is good drainage and aeration and on more alkaline sandy loam soils with a pH of 6.5 and above. In the more alkaline soils you need fine grades as the soils are not sufficiently acidic to etch out most of the bound up minerals, especially phosphorus.

First application, two to five tons per acre. Thereafter one or two tons per acre per year for orchards, or after every crop or alternate crops (in the case of rotational cropping). Basically, on the above soils, feed small amounts often rather than large applications.

Medium Grade Rock Dust - Maximum 25% minus 200 mesh; 25% minus 100 mesh; 50% minus 40 mesh.

For use on sandy loam to loam soils, and soils with a pH of 6.65. The rate of application could be the same as above. However, you will probably not need to apply as often because of the slower, lower leaching factor.

Coarse Grade Rock Dust - Maximum 10% minus 200 mesh; 20% minus 100 mesh, with an increasing percentage larger than 60 and 30 mesh. (These figures, as with those prior, are approximate.)

For use on clay and clay loam soils, and soils with a pH of 5.5 to 6. These soils have the acid conditions necessary to etch out the bound minerals from the coarser rock dust. Where possible, apply five tons or more in the initial application. Thereafter less will be required than in the case of sandy soils.

Important

By applying the most appropriate mix of particle sizes of ground rock to your soil, you can in time improve the whole structure. Always bear in mind that good results are achieved only with a well balanced soil. In clay and possibly loam soils, you can improve the aeration and drainage by using coarser ground rock.

Please Note

With limited time and the urgency for technical data on the subject, this paper has been rushed through for despatch. A more detailed and comprehensive manual will in time be available.

Barry Slogrove
Director, Eco Australia
M.S. 591 - 6 Beenham Valley Rd
Wolvi via Gympie
QLD 4570 Australia

Our tree planting and remineralizing programs to replant the decimated forests of British Columbia and across Canada are the primary focus for Earthday 1990 National.

earth day
April 22nd
1990
CANADA

A GLOBAL EVENT

Millions of remineralized trees to be planted, a "Seed to Tree" program through the Boy Scouts at elementary schools, a worldwide program promoting remineralization through CAIFA, "rock dust" concerts across the country and around the world, a nationwide supply of rock dust to come on the commercial market, and more news!

A report from Doug McLean

Peter Petronek and I have contacted "rock dusters" across the U.S. and have nothing but praise for your cooperation and support for our project. Thanks to all!

For yours and others' information, I'd like to keep you informed of our efforts to date:

1. We have secured permission to do extensive rock dust remineralization tests with seedling trees and recently reforested areas. We have received permission for the Director of Silviculture, Mr. Peter Ackhurst, of the B.C. Forest Ministry to do extensive tests with rock dust in the Silviculture Nurseries as well as the Federal Nurseries of the Canadian Forest Service. Through the vehicle of Earth Day, we have been able to realize a dream of people here who have been trying to be heard on remineralizing for 10 years and longer. We feel fortunate indeed to have been able to help them and the larger goal.

2. We have secured a donation of 260,000 seedling trees to be handed out on Earth Day 1990 and the weeks following by the Boy Scouts and others across B.C. (We hope to be able to include a one pound bag of rock dust with each tree, supply permitting). The time is short and we know of no supplier in B.C. with dry rock dust. We live in a mid-latitude rain forest climate, and keeping things dry (dusty dry) is a problem!

3. We are instituting a program to plant 2 million seedlings (or more) in the next 6 months, remineralized to insure their survival. At present, 4 of 5 seedling trees perish in the current chemical reforestation efforts. The Provincial Ministry of Forests is very interested in what we are doing and has shown great support for our efforts, not only in remineralizing, but in getting the chemicals out of our forests. There are horror stories of tree planters whose flesh crumbles from their hands as a result of handling seedlings soaked in the chemical soup of "___cides".

4. Trying to institute a "seed-to-tree" program to start 100,000 seeds in boxes (and rock dust!) with the Boy Scouts, to get this into the Elementary schools of the province.

5. We are instituting a program for African reforestation and remineralization with **CAIFA** (Canadian African International Forestry Association) with homemade rock dust MFG, as well as expanding our efforts into Mexico, Central and South America and India with the same goals in mind.

6. Have been in consultation with Energy, Mines and Petroleum Resources Ministry, regarding the feasibility of converting mine site overburden into rock dust and spreading this on the forests - solving two problems at once. Peter was called to the office of the Minister of the Environment and discussed these and other ideas at length last week.

7. We are organizing and promoting a 20 city tour of "rock dust" concerts to raise awareness of the value of tree planting and remineralizing across this country and around the world.

8. We have made great progress in rock dust manufacture locally. A major supplier of aggregate is revamping his production to recover rock dust from his "waste" fines. He has a company which is quite capable of instituting a nationwide supply of rock dust on the commercial market.

We feel that there could be no more effective vehicle for this message than Earth Day Canada 1990, and we have a commitment with total support from the executive of Earth Day Canada 1990 for these and other projects. As you can see, we've been working hard on behalf of us all, and will continue to carry the message out to all who will listen.

We'll keep you posted on our progress and new ideas.

Doug Mc Lean

"CropDusting" *in California*

Yvonne Rado and Rado Rock take off, supplying rock dust to Washington, Oregon and California

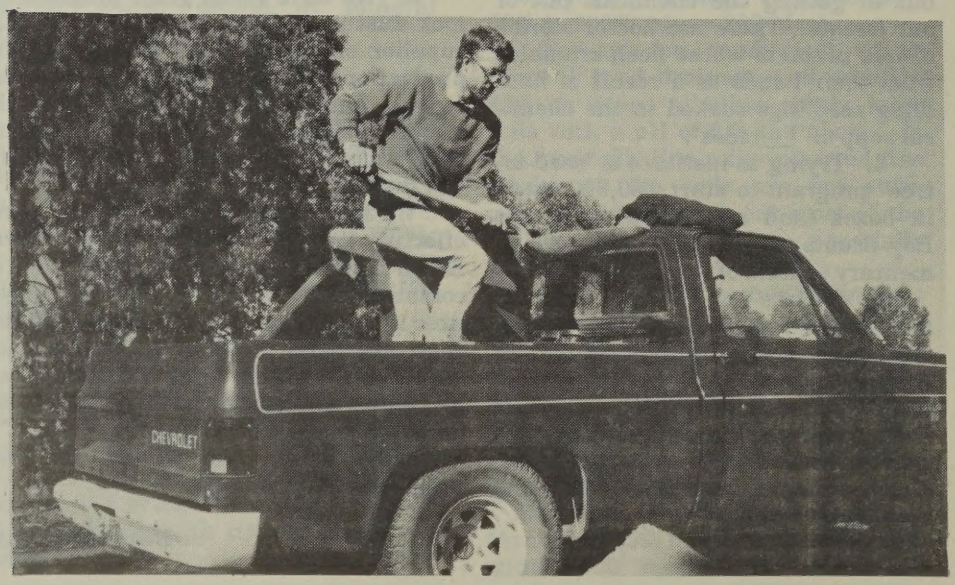
Expertise and enthusiasm were the hallmark of the discussions regarding cropland remineralization between Jon Biloon (right) and the growers.

Applying rock dust and seeing the results firsthand provides the best persuasion for remineralizing soil. The rock dust itself is its own best advocate.

This belief fits perfectly with Jon Biloon's suggestion that half-ton loads of **Rado Rock's** dust be distributed to selected growers throughout California. Let the dust speak for itself. . . and for remineralization.

Jon Biloon now resides in Hawaii where he organically farms 11 remineralized acres. The first rock dust purchased from Don Weaver) used in my suburban garden was supplied to Don by Jon. Jon's quest for rock dust was interrupted by family and farm.

Rado Rock



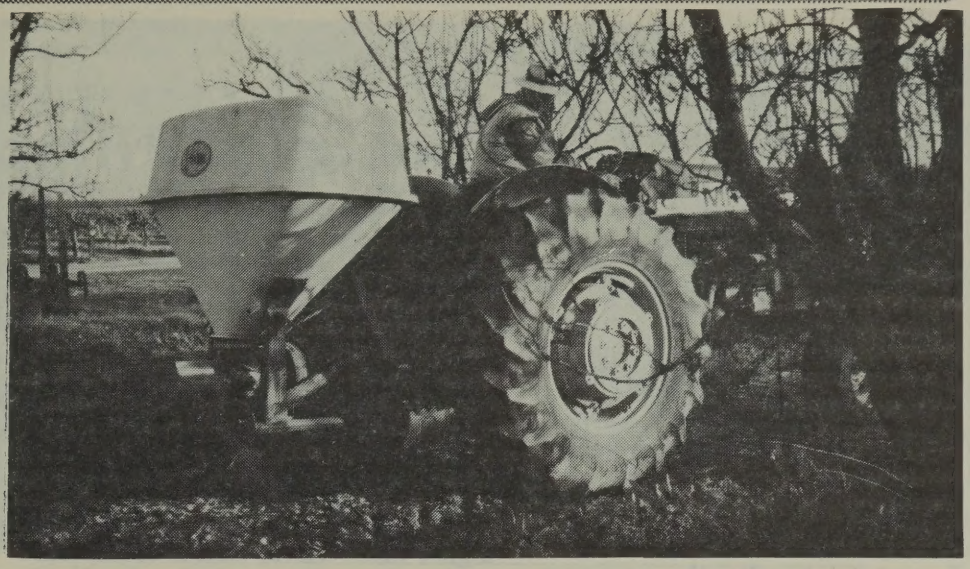
One of the appreciative growers helping himself to his half-ton of rock dust.

It was left to others to continue the search. Unaware of Jon's story at the time, I felt the call to include quarry-crawling as part of my lifestyle--a joyous part, I hasten to add. Jon's experience, added to my own, comprises a modest fund of information on rock dust availability in the northwest. Jon, however, is uniquely suited, with his combination farming/rock dust experience, to address growers' specific queries relating to remineralizing their croplands. And as such, he functions as a consultant for Rado Rock.

After eight weeks of long-distance telephone discussions, it was decided that Jon would travel to California to attend the *Committee on Sustainable Agriculture Conference* and after that, begin daily deliveries of rock dust to selected growers with sufficient courage and interest around remineralizing. Jon actually found several interested growers at the Conference to add to our itinerary.

"Let the dust speak for itself... and for remineralization."

"Reception on the part of the growers was unilaterally positive. The attitudes ranged from cautious optimism through happy anticipation. And there was even some recognition of their part in a history-making process."



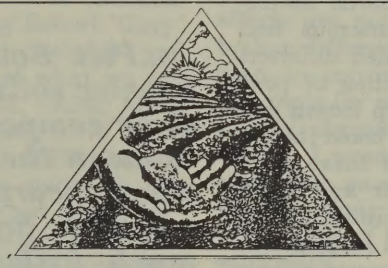
One grower enthusiastically told me that he had just acquired a spreader which he could hardly wait to use to spread the rock dust! And he joyfully demonstrated it to us by spreading some of the dust while we watched.

From the home base of my cousin's acreage in the heart of the San Joaquin Valley, where a load of dust was dropped, gifts of dust were delivered to farms as far north as Chico, as far south as Visalia, and out to the west in the Salinas Valley. We traveled nearly 2,000 miles! The one criterion in selecting growers was that they already knew of rock dust and were open to giving it a try. The growers represented chemical, transitional and organic methods. The farms were of varying sizes from 10 to 3,000 acres. All sold their produce commercially. Crops grown on these acreages span a variety including grains, kiwis, grapes, strawberries, olives, orchard fruit and vegetables. Soil types ranged from sandy to hard pan. This exercise should prove to be "fertile ground" from which a wealth of photographable results will accrue!

Reception on the part of the growers was unilaterally positive. The attitudes ranged from cautious optimism through happy anticipation. And there was even some recognition of their part in a history-making process. All were appreciative of our efforts.

This journey provided the utmost pleasure for me in witnessing the interaction between Jon Biloon and the growers. I think that the Network can imagine the wonderful (wonder-filled) atmosphere of expertise and enthusiasm around rock dust and "clean" growing that I was privileged to encounter.

Yvonne Rado



RADO ROCK ROCKDUSTS

come to you after a long process of research, field trips, testing and analysis. Research was directed toward likely areas of optimum rock deposits as described by Hamaker-Weaver. Field trips to more than 50 sites for collection of samples covered over 3,000 miles and a period of time spanning 18 months. Then ensued growth trials where color, hardiness, insect and disease resistance, and root growth were noted in addition to obvious growth differences. Those dusts which were in the pots of the best performing plants were then sent to a laboratory for analysis. From those results, dusts were selected for further analysis. A final selection was made and now, several rock dusts are offered by RADO ROCK for your soil's remineralization.

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David H. Miller of Oberlin College

talks about rock dust research, compares various rock dusts, expands greatly on gravel sources for 33 states and tells you how to find more...

I want to describe the progresss and current state of the research I've been doing on rock dust. With the help of Oberlin College research grants and student research assistants, I have set up numerous test plots to which I have added different dusts along with quantities of peat moss and compost to help loosen our heavy clay soil as well as boost its low organic content. Most of these plots were begun last summer and since then we've been monitoring soil microbial activity via soil respiration, enzyme activities, and organic carbon content. We've also grown a variety of garden vegetables in these plots, following their growth, and harvesting and analyzing their mineral contents. Positive results from dust additions have been slow in coming, particularly in terms of general size and vigor of the plants, all the plots yielding pretty much the same size plants, whether potatoes or beans, squash or leeks. The only exception has been with carrots, which did show some pretty clear size increases, especially in the Michigan Aggregate dust plot.

While this has been disappointing, several other changes do indicate that the dusts are exerting effects on the soil, even if the plants have not yet visibly responded to them. First, the different dusts consistently cause a more rapid reduction in the soil's organic carbon content, indicating the dusts are stimulating microbial activity. Second, the control soils (with just peat and compost added) yield a somewhat greater initial rise in respiration than do dust treated soils. However, after this initial period of a week or two, the dust treated soils respiration rates overtake those of the controls and maintain a consistently higher rate. Third, results of mineral analyses are showing higher levels of minerals, especially micronutrients, in vegetables grown in dusted plots.

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The question still remains: Why have none of the dusts shown the kind of immediate dramatic effects on plant growth promised in the oft quoted directions for doing pot tests? (I've performed pot tests with most of these dusts and have not yet seen this stimulation of plant growth.) Are only a certain few dusts (those that ". . . have a spectrographic analysis similar to the tables of abundance of elements in igneous rocks, as found in the Encyclopedia Britanica") going to prove useful or adequate to the enormous task of remineralization? I think not.

At least two reasons for the lack of plant response come to mind. First, the dusts may need more than three months' time to go to work in our heavy clay soil. In this connection, I note that Piet Bouter stated that heavier soils like the dust in their compost, which I take to mean the dust works best when incorporated into soil microbes, and that happens much faster in a compost pile than in a heavy clay soil. Second, I'm certain that the different dusts have considerably different chemical compositions, and it is reasonable to assume that those which most closely approach the chemical composition typical of igneous rocks would prove most beneficial. However, those dusts that stray from this ideal can still find some use, at least in some cases. The limestone Hamaker used in his pot test series (*SR #14*) helped the radishes, even though it probably contained mainly calcium and magnesium as beneficial mineral nutrients. If local dusts lack but a few of the minerals needed to provide a proper balance, then supplementing them with those missing elements to restore a more favorable balance might work. Were calcium or magnesium the missing elements, limestone could make up the difference, for example. The point I'm trying to make is that using a local dust that comes close to a good balance would reduce the expense and generation of more CO2 that long distance transport of the best dust would involve. At any rate, we have a way to go before we can answer all our questions! Besides those dusts lacking in certain minerals may still allow a micro-organismic population explosion, though it may be delayed until they can adjust to the missing elements.

So far I have been testing the following dusts or products: Dave Butler's "bug dust" from western Pennsylvania, two local Ohio glacial gravel quarry dusts, Michigan Aggregate dust, Florastim, Feldspar (SR 11 - 12), a dust from Bayfield County, Wisconsin, Azomite (now called Ele-M-ite), basalt dust from John Lane quarries in Amherst and Westfield, Massachusetts, Nutricarb (a product derived from various coals from southeastern Ohio), and just recently a dust

Dave Miller with two students currently working with him: Christine Douglas on the far left and Kim Monis next to him.

Might it not be that, under certain conditions which have not yet been worked out, gravel dust may also take more time to bring about the changes in plant growth which John Hamaker and others have seen?

generously donated by Bob Love of Harmony, Minnesota, which he ground from Mississippi River gravel. I've also just begun pot tests of dusts from a number of local glacial gravel quarries, which I located using listings of quarries provided by the Ohio Aggregates Association, an industry organization. I'll say more about that later on.

Of all the dusts, the Michigan Aggregate, the John Lane basalt, and the Azomite dusts have worked far better than any of the others, corroborating the findings of others who have tried these. For those of you who live close enough to those sources, I would definitely recommend a visit to obtain some of your own to try. In Michigan it's cheaper if you load your own ($5 per ton vs. $10 per ton) and this also gives you the choice of selecting from the pile those portions which are richer in the finer dust while avoiding the sandier areas.

The basalt dust from Massachusetts is free for the taking and called "float." The Westfield quarry has much larger quantities available than the Amherst quarry. If you go to get your own, you will need to put it into some kind of containers as it is so fine (virtually all of it passes through a 250 mesh screen) that it behaves like a fluid and will quickly slosh out of the truck bed if you accelerate or slow down too quickly. I have been using old feed bags (for strength) lined with plastic trash bags (for non-porosity). This basalt dust or "float" is quarried from the Holyoke Range of mountains in Western Massachusetts. It is called Westfield trap rock, or "grabbroitic diabase, a coarse grained, dark gray, highly altered rock composed essentially of kaolized plagioclase and chloritized augite" (this description given to me by J. Lane Co.). The chemical composition--provided by Robert "Gary" Garrabrantes, a most helpful and enthusiastic supporter of what we are about--is as follows: SiO_2, 49.2%; AlO_3, 13.2%; Fe_2O_3, 17.)%; CaO, 7.8%; MgO, 6.3%; K_2O, 4.3%; TiO_2, 0.3%; MnO_2, 0.2%. Other trace minerals are likely present, but were not tested for. One of the analyses given me showed that 66% of this dust passed through a 400 mesh screen! This is the same type of dust which has been found effective by the editor. Incidently, let me support the idea (mentioned in ***SR #15 - 16***) of transporting a small load of this basalt dust to a nearby area where trees are suffering from acid rain or where sugar maples are being attacked by the pear leaf miner, spread the dust in the affected area and see how well it might affect a cure for the ills the trees are suffering. In my experience it raises the pH of treated soil by about one-half pH unit, which alone would help acidified soils, and it is a good source of several important minerals. Since the dust is free for the taking, the only missing element is creating the link between dust source and someone concerned about acid rain. Is that someone reading this?

Azomite is now once again available, renamed Elemite, and ground fine enough to pass through a 200 mesh screen. It comes in 40 lb. sacks at $15 per bag, a pretty steep price, but a lower bulk price of $300 per ton also exists (see gravel dust sources list).

While I am stressing the benefits of Michigan Aggregate, Massachusetts basalt and Elemite dusts, I have not given up on the other dusts in the rest of the plots. Some of them appear more promising than others but their effects are not yet clearcut enough to bother differentiating among them. I plan to continue monitoring all the test plots for several years before completely dismissing any of the other dusts. I would not be surprised if it took them as much as a season or two to show their true value, particularly in the type of heavy clay soil I have to work with.

I have spent some time trying to reconcile my lack of immediate results using these dusts with the promise of rapid plant response that Hamaker propounds. The most obvious answer is that these dusts are no good because they don't contain the correct proportion of mineral elements. If this is so, I should soon know, as I plan to begin an elemental analysis of the dusts, with help from our Geology Department. Another explanation is that my soil is not as deficient in micronutrients as some others which have shown dramatic increases in plant growth by dust additions. Both of these answers are unsatisfying to me, however. It might be that such rapid plant response as Hamaker describes only occurs under conditions of severely depleted soils being treated with dusts containing just the right proportions of elements. If so, then absence of such immediate response should not be cause for dismissing a particular dust out of hand. Such dusts might still be of benefit to a soil. It may just be that they take longer to exert their effects.

In this connection, it may be useful to employ an analogy often used by organic farmers, namely that of "feeding the soil, not the plant." This is just what we are attempting to do by using

gravel dust, to feed the soil microorganisms which in turn will feed the plants. In thinking of this, I have often found it helpful to compare the soil system to our own digestive system. Thus a soil which has been farmed conventionally but is then shifted to an organic system which relies heavily on gravel dust as a nutrient source, might behave similarly to a human digestive system which has been fed a diet heavy in "junk foods" but then is abruptly shifted to a natural diet emphasizing whole grains, fresh fruits and vegetables, etc. There is typically an initial period, immediately after such a radical dietary change, when the system must adjust to the new foods. Such adjustment often involves a change in the makeup of microbes in the intestines, such that the previous microflora is replaced by a new and altered assemblage of microbes which are better adapted to aid in digesting the new diet. There is sometimes even an interval when the individual suffers some intestinal discomfort during this changeover and they might initially gain less sustenance from the new diet during this period of changing microflora. Such is often the case when one abruptly changes diet during travel, eating the local ethnic foods rather than their accustomed "meat and potatoes" diet from back home. I am well aware of the dangers inherent in overreliance on such analogies, but I present this as my current thinking to explain the different results I am getting.

Another factor possibly at work here involves our expectations that our treatment of the problem of soil infertility will result in an immediate "fix." We are used to seeing rapid responses when we add concentrated conventional fertilizers, so we have come to expect such quick results. When converting a farm from conventional to organic, the farmer is usually warned to expect a transition period of several years, during which he might even experience more problems than he had during the years of declining yields and rising costs which drove him to make the shift in the first place. Might it not be that, under certain conditions which have not yet been worked out, gravel dust may also take more time to bring about the changes in plant growth which John Hamaker and others have seen?

In order to expand my research to include other soil types I plan to contact other Ohio organic growers who have soils radically different from mine and encourage them to try some of our local Ohio dusts. As I and others find additional promising dust sources throughout the country, I want to make contact with others of you who want to try these dusts, so I can keep track of your experiences and collect samples of your soils, both treated and untreated, as well as the dust you're using. It would be particularly useful for me to work with someone whose soil differs considerably from mine, especially if it is a sandy soil, to try and pin down some of the different ways dust behaves under such different conditions.

One curious sidelight about the relative effectiveness of the different dusts is that the material from western Pennsylvania has so far had little effect on my soil, yet David Butler sang its praises in ***SR #15***. I assume his success vs. my lack of it relates to differences between what is or is not missing from our two soils. The quarry provided the following analysis of their "bug dust:" SiO2, 50.6%; AlO3, 5.1%; FeO3, 0.7%; CaO, 23.6%; MgO, 0.1%; total S, 0.8%; Na2O, 0.1%; K2O, 1.0% and called the rock a "calcareous sandstone." These percentages don't come anywhere close to 100% when totaled, mainly due to the fact that they also list an 18.6% "loss on ignition," which I assume to be the carbonate part of the calcium carbonate in the stone. One very clearcut effect of this dust has been to raise the pH of my soil from 6.5 - 7.0 up to as high as 7.9, which may, in fact, be a trifle too high! Perhaps, if David's soil had a lower pH to start with, part of the benefits this dust had might be due to its raising his soil's pH. Also, some of the most recent data I've received on the mineral content of leeks and brussel sprouts grown in Pennsylvania dust treated soil looks promising, too, so I have by no means given up on its efficacy. Most of the area treated with this "bug dust" was under water during a critical period of the growing season, which didn't help matters any. 1988 we have drought, 1989 it's floods . . . climatologists may argue about whether our long term future will be hot or cold, but an immediate future of such wild fluctuations as we're currently experiencing may be just as hard on the farmer as one extreme or the other.

As another part of my research, I have begun a systematic search for sources of gravel dust in Ohio and surrounding states, making use of each state's gravel industry associations to locate them. Typically these organizations have membership directories which list the majority of sand and gravel producers in that state, often along with a map which gives locations. If you're lucky, the producers' phone numbers will also be listed, making contact easy. If not, a visit to your local phone company will allow you to look up numbers in their bank of phone books. I am also just starting to send for the Geological Surveys of each state, which give more detailed descriptions of stone crushing operations as well as sand and gravel quarries.

For those of you who live in any of the following states, I would be delighted if you would like to volunteer your time to contact gravel sources in your state to determine whether they would be likely sources of gravel dust. I currently have lists of operations in the following states: CA, IL, IN, KS, KY, MA, MD, MI, MN, NC, ND, NE, NJ, NM, NY, OR, PA, TE, TX, VA, WA, WI, and Ontario, Canada.

I've found the direct approach works well. Introduce yourself as

Write for newly expanded Gravel Sources in 33 States and Canada

If you live in one of these states you can help us contact gravel sources in your state to determine whether they would be likely sources of gravel dust:

MI, MN, MT, UT, NV, CO, NJ, PA, MD, NY, DE, AL, MS, FL, AZ, NM, IA, KS, NE, ND, SD, SC, NC, GA, VA, MA, NH, VT, ME, CT, RI, CA, OR, and Ontario, Canada.

For a list of gravel sources in your state (one of the above), send a self addressed stamped envelope (Large manila with 65 cent stamp to David H. Miller Department of Biology, Kettering 103 Oberlin College, Oberlin, Ohio 44074-1082.

Dave Miller at Oberlin

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someone who is researching the potential usefulness of gravel dust as a soil mineral supplement to improve plant growth. Mention you've obtained their name from your state's mineral aggregate association and you want to ask a few questions to see whether a visit to their premises to obtain samples for testing would be worth your while. The kinds of questions to ask are those given by Piet Bouter in SR #14. If their answers sound good, a visit to obtain samples with which to perform pot tests is the next step. One stumbling block you may run up against is using the right name for the dust. Just gravel screenings or fines should be enough, but I've found that some places have their own idiosyncratic name for what we are looking for and unless you use it, you may not get very far. Some of the names I've come across include: float, bug dust, fill sand, swamp sand, and flume sand.

Just drop me a note and I'll send you a list of all the producers in your state, of if you're not feeling quite that ambitious, I'll just send those in your immediate vicinity. Check them out and keep me posted as to your results.

Dave Miller

SR Research Packet

SR offers a Research Packet it has made available in the last year on remineralization research around the world including Germany, Austria, and Australia for forests, agriculture and orchards. It has been updated with many new studies including those by Peter Von Fragstein at the University of Kessel, Ward Chesworth at the University of Guelph, and Dennis Eberl and Tung Ming Lai at Colorado State University.

Send $10.00 within the U.S. and Canada and $15.00 outside North America to: SR Newsletter, 152 South Street, Northampton, MA 01060.

The Legacy of Firman Bear

The following item, from the New Mexico Organic Gardening Association, was printed in the Fall, 1989 issue of Ohio Ecological Food & Farm Association (OEFFA)) NEWS:

Thanks to a plant scientist and agricultural consultant in New Mexico, Firman Bear can rest more comfortably in his grave.

For years, proponents of the organic method have cited that organically grown vegetables are higher in mineral and nutrients than those grown with the aid of chemicals.

When the Firman Bear data appeared in the newsletter of the New Mexico Organic Growers Association recently, however, Dr. William S. Peavy did a little research of his own and sent for a copy of Bear's original report. He discovered that the Rutgers team was analyzing the mineral variation in vegetables grown in different parts of the country, not the method of production.

What the original research found was an "unbelieveably wide variation in mineral content between samples collected from the east coast and those collected further west," Peavy reported in a later edition of the NMOGA newsletter, trying to set the record straight. "The further west the samples were taken, the higher the mineral content."

"The data had nothing to do with the way the vegetables are grown but where they were grown," Peavy said.

Someone, somewhere, sometime since Bear published his research in 1948, altered the "highest" and "lowest" value labels on Bear's data table to read "organic" and "inorganic"--or, on the version OEFFA has been circulating for years--"organic" and "conventional." No more.

On a trip from New York State westward in the mid-1950s, Peavy verified with his taste buds what Bear's study had showed scientifically--that the taste and quality of vegetables improved the further west he traveled.

Peavy encouraged readers to practice organic gardening, but recommended that growers be sure their soil is well-mineralized if they want to produce high-mineral vegetables. That is the Firman Bear legacy: that care must be taken to remineralize worn-out soils if we hope to raise healthy, flavorful, nutritionally superior crops.

Dave Miller

Questions for the Pulverizing Industry

I would like to purchase a pulverizer that meets the following requirements:

1) The raw input material can vary in size and hardness precisely the way glacial gravels and silicates like basalt and granite do but need not exceed approximately 3 inches in diameter if that allows us to limit ourselves to one machine.

2) The end product must be at least 80% 200 mesh and some finer well contained dusts at least with a target capacity of 1/2 ton per hour, more or less.

3) Power source preferably truck mounted and powered. (If not possible give alternatives.)

4) Low wear and easily replaceable parts.

I am organizing a campaign to test and prove the food and biomass growth and quality differences resulting from fresh local glacial dust conditioned soils for agriculture and forests.

Piet Bouter

Remineralizing Maples

"In recent times sugarmakers have become more and more alarmed about the declining health and vigor of their sugar maples in sugarbushes and along roadsides. They have seen their maples weakened and, in many cases, killed by insects such as pear thrips, and/or by diseases such as maple sapstreak and maple dieback.

Producers often see this distressing situation as they go about tapping trees in late Winter in their orchards. They, of course, would like to know the causes of why this is taking place in their stands, and what can be done to regenerate tree health.

Joanna Campe... told 200 Bay State maple producers at their January 13 annual meeting about one process called soil remineralization which might prove helpful. It consists of applying glacial and rock dust to regenerate and fertilize the soils around the maples. She stated that this would "add up to a hundred trace minerals and elements needed by all life, and by nourishing the microorganisms in the soil, whose protoplasm is the basis of all living things, this same material could also reinvigorate forests, farms, orchards and gardens."

From "Gravel Your Orchard"
by Bud Gavitt,
agricultural editor/writer at The University of Connecticut
The New England Farmer

So begins the great coverage for **The New England Farmer** on a recent address to the Massachusetts Maple Growers Association.

While very occupied with the international networking efforts of ***SR*** newsletter, in my own bioregion in New England I have been concerned about the fate of the maples and their decline in recent years. I was very grateful to be invited by Rick Chandler of the Mass. Maple Growers Assn. and have the opportunity to introduce remineralization to maple growers. Greg Watson, executive director of New Alchemy Institute joined me and spoke to growers about his longstanding interest in remineralization, his concern about the maples and the possibility of New Alchemy participating in a remineralization project to monitor the maples. So far, as a result of the address and the article that has appeared recently, about 30 maple growers are ready to try out remineralization.

In considering the urgency of restoring the health of the maples, the idea was suggested of conducting an experiment with the University of Massachusetts and New Alchemy Institute, as well as with a lot of growers to get a headstart on the problem. Dan Hemenway also put forth a paper to growers requesting that viable maple seeds be sent to the Treebank project to help insure their future survival.

Maple growers can call ***SR*** for advice or consultation on remineralization and to subscribe to the newsletter. We'll keep readers in touch with the latest information and advice to maple growers as this ongoing project develops.

SR Recommendations

The ideal source for remineralization is to use mixed- rock gravel dust, the finest ground available. This would come from a glacial deposit or riverbed. Already "mixed" by nature, it normally offers the broadest spectrum of minerals and trace elements. Other single hard silicate type rock sources such as traprock (basalt) and granite can also be useful. The cost for such material normally runs from $1 to $5 a ton at a sand and gravel pit or quarry.

There are many ways to apply dust to the soil or forests, depending upon the scale and applicator's preference. They are labor intensive means, but a one time application will last for many years and possibly decades. The ideal logistics of application for maples growers' needs is still to be worked out by the ongoing experience of the growers at this point, but we'll keep you up to date on the best results as they evolve.

It can be spread by hand out of a wheelbarrow, by using a manure spreader, sprayed with a mechanical sprayer or an old fashioned "duster" used in orchards. Perhaps in future it will be practical to apply by plane or helicopter. (At the moment cargo military planes from the local base, for example, fly exercises in the area around the Quabbin dam. One forester from the region has suggested the planes could be put to practical peaceful use for remineralizing large stands of forest.)

The amount used *needs to be determined* by the particular source material chosen for application and its particular fineness.

The finer the dust, the sooner the results, depending on what is chosen. The higher percentage of dust that goes through a 200 mesh screen the better. This will be utilized right away and the rest of the material will continue to break down and nourish the soil and trees over the years.

One material being recommended is basalt traprock float, found at the quarries of Lane and Son at the Notch on Rte 116 in Amherst and in larger amounts available at their main quarry in Westfield. This is a very unusual material in its extreme fineness, a lot of it going through a 3-400 mesh screen. It practically has the property of liquid when being loaded onto a truck dry and it is processed dry at both sites. This means it is advisable to wet down the top and tailgate and cover the top of the truck for transporting, unless you want to remineralize the roadsides! When dumped, if not contained it flattens out a lot. CAUTION is to be used if this particular rock dust is applied dry, either for maples or agriculture! A good quality mask should be worn as it is fine enough to be inhaled. This means a mask with cartridges. These begin at about $25.00. The safest way to apply it without a mask is wet. If applied tree by tree you could try stirring it into a bucket of water and pouring it over the ground. This needs still to be tried out but with good sense and experience we'll be able to improve on our recommendations for application.

For this material the quantity I would recommend would be 5-20 lb per tree, depending on the size of the tree. It would be dusted from about 3 feet from the trunk out to the dripline and further, even better. Applying too much of this material would result in compacting of the soil *if* there is not a lot of organic matter growing on the duff around the trees.

Another source of material I would like to recommend is available in Northfield, north of Greenfield and close to Vermont. The traprock, processed wet, is too coarse to be very useful, but they do have a material which looks very promising as a

broad sprectrum source of minerals exactly along the lines of the suggestions of John Hamaker. It is glacial till from a hard rock ledge. It does contain some loam, but a minimal amount and appears to have a high percentage of glacial rock dust, about 54% of which goes through a 200 mesh screen. It was wet when I saw it and I am not sure what would be the best way to apply it, but I thoroughly trust yankee New England ingenuity to come up with a practical straightforward way. This type of gravel dust (not as fine as 3-400 mesh or less than a micron in size) *does not* require a mask for dry application.

At this time I would recommend to local maple growers the traprock float from Amherst or Westfield, mixed with the re-wash (glacial till, 1/3 goes through a 200 mesh screen) from the Westfield quarry or mixed with the glacial till from the Northfield site. Again I'm not sure what would be the easiest means for mixing and applying it. The ideal mix would be something like 3-5 tons to an acre of traprock float with 5-10 tons to an acre of glacial till although it could be less and still get great results.

The traprock is free if you pick it up and the glacial till is available for $2-3 per ton in Northfield and Westfield. I would expect dramatic results through this broad spectrum of minerals and the bonus addition of organic matter in the loam! While I think it is good to be conservative and estimate seeing the results in 1 1/2-2 years, I think it could be seen in as little as 6 months (not winter).

A solution for the pear thrip?

Pear thrips and other arthropods thrive on trees that are stressed by drought, road salt, overtapping, overpasturing and pollutants. The latter include ozone, acid deposition, sulphates and nitrous oxides.

When the soil warms up to about 40 degrees Fahrenheit, the pear thrips ascend to the trees, embedding themselves in the bud casing. This can be predicted perhaps one week beforehand. They take one or two weeks to ascend and enter the trees. Once inside the bud casing, they have an oportunity to defoliate before the leaves open.

Regarding remineralization, it might be possible to anticipate the pear thrips' leaving the ground and ascent to the trees. If the trees could be sprayed and the surrounding grounds at this time with a very fine rock dust like the traprock float, a great percentage of the insects might be deterred. Or, if it seems practical and depending on the weather, perhaps a light coat of rock dust could be maintained on the trees throughout this time. The extreme fineness of this dust would irritate the eyes and organs of the insects. One way to do it is to take a burlap bag, fill with the dust and shake it around the trees. Remember to wear a good mask and protect yourself from inhaling it!

The effects of remineralization on soils and forests

The idea is to regenerate soils to what they were at the beginning of the interglacial period. We can recycle the minerals that are otherwise getting used up. We can grind rock and gravel dust to a very fine powder and apply it to our soils and forests. Combinations of gravel and rock dust have been shown to:

1) Enhance the ion exchange capacity around the root system and in the soil;

2) Stimulate the life of microorganisms;

3) Increase the nutrient intake of plants;

4) Counteract the effects of soil acidity;

5) Prevent soil erosion;

6) Increase the storage capacity of soils;

7)Contribute to the building of humus complexes;

8) Repel attacking insects when finely sprayed on plants

9) Have antifungal properties and

10) make plants and trees highly resistant to insects, disease, frost and drought.

Acid rain is upsetting the crucial soil balance and the tree's nutrient source. When the soil is too acidic, the trees can no longer take up nutrients and instead are poisoned by the heavy metals and pollutants to which they are subjected.

Gravel or rock dust neutralizes the pH which acts as a buffer--heavy metals are not leached into the soil and taken up by the trees. Their nutrient intake is increased and their resistance is strengthened.

Remineralization boosts the "immune system" so to speak. It builds the soil life, the humus building complex with its complex relationship of organic matter, microorganisms, minerals and mycorrhiza.

Discovery of the benefits of rock dust

Julius Hensel, an agricultural chemist, biochemist and nutritionist, first discovered the agricultural value of rock dust while milling grain in 1892. He applied bits of ground rock over the soil of his garden and later repeated it with fruit

New Salem Remineralizes

On April 28, a hot July-like day in the 90's between two cold spells, Mrs. Viola Weatherby organized the first maple remineralization project in her community, the beautiful town of New Salem, Massachusetts. It was attended by just about all of those in town who have maple sugar bushes, along with the owners, Judy McLamb and Jean Stashell of a Christmas tree farm, and Bill Hamilton who has a large apple orchard, Hamilton Orchards. Also present was Don Reutlinger, who is participating with a University of Massachusetts project involving monitoring of the pear thrip, and Bruce Spencer, Chief Forester of the Quabbin dam region. Attending with me was Janet Scott, new co-editor for ***SR***.

After explaining the process and a discussion, Janet and I applied traprock float to a large area around a "3 tap maple" with coffee cans and wearing masks. It was a windless day and inhaling the dust was not at great risk as it was applied low to the ground. We applied about 20 lb of the rock dust material, loosely dusted around the tree. The material weighed in at 8 lb to a gallon, or one half of a five gallon pail. The material covered an area out to the dripline.

We'll be returning to the site of the Christmas tree farm another day to begin remineralizing four kinds of Christmas trees.

A form will be sent out to all those participating (similar to the rock dust preference form in the newsletter) to gather data from the various trials.

J.C.

trees. He found that the apple trees, which had previously given wormy, imperfect fruit now produced fine quality fruit, free from worms.

Soil remineralization was rediscovered and made a comeback in Europe with a growing number of farmers about 30 years ago. Today, large companies in Germany, Austria and Switzerland produce rock dust especially for agriculture and orchards.

There have been various research projects with remineralization and its effect on forests in Europe. One study showed that a stand of remineralized pine trees had *four times* the timber volume of the unremineralized plot after 24 years. The effects of the application of rock dust lasted for over 60 years.

Professor Peter Von Fragstein at the University of Kessel, found that when plants are sprayed directly with rock dust it acts as a deterrent. It also increases plant resistance to insect infestations over a period of years. To remineralize during an insect infestation is to reap two major benefits at once.

In *The Book of Rock Dust*, author Helmut Snoek, (published in Germany) documents his three decades of research on soil remineralization for agriculture and orchards.

Snoek recommends a combination of rock dust and city sludge (treated to be free of heavy metals) for forests. In Massachusetts towns such as Amherst and East Hampton are considering waste treatment with cement kiln dust. The end product, called N-Viro, would be sold for agriculture by the towns that employ this waste treatment method . This material is well worth investigating as a possible source of organic matter and minerals and especially when mixed with gravel or rock dust. At approximately $2 per ton it would be highly practical to apply on a large scale as a nutrient source for maples. At the same time it would give a viable market to cities worried about what to do with their city sludge. N- Viro will be explored in depth next issue by Tad Montgomery, who specializes in the area of waste management.

The Maples' Future

Aerial surveys four years ago showed 82% of maple trees in decline in Quebec. It seems that compared with Canada, Massachusetts and New England maple growers still have a chance to reverse the decline before it is too late if they act quickly.

Rick Chandler has observed in Massachusetts the decline in viability of maple seed and fewer seeds sprouting. There is also generally less brush growth around the trees and little new growth. There are poor crops of leaves. The leaves are small, sparse, defoliated. Mayflowers, ferns and jack in the pulpits are still thriving, a positive sign for this region.

The Disappearance of Major Species of Trees

During this century some major deciduous species have practically vanished from the continent, including the chestnut, a victim of blight caused by a fungus; then the elm, killed by Dutch elm disease, a combination of bark-boring beetle and fungus. In entering the last quarter of the century two Eastern hardwoods, beech and ash are also sickening and are recommended for culling before their lumber value deteriorates further. A similar combination of insect and fungus is blamed for their loss. Even now the chestnut blight has found a new victim, Southern live oaks- oldest living trees in the East.

Now at the end of this century, yet another major species- the sugar maple- is weakening. There is still time to take steps to regenerate the maples. Remineralization is the key. Let's do it before its too late for the beloved maple.

Source List

Quarry sources of gravel/rock dust mentioned here:

In Amherst:
Lane and Son
Rte 116
(413) 253 2075

Speak with Mr. Grover Twiss and let him know that you looking for traprock float recommended by ***SR*** newsletter for agriculture and maples. Pick up for free with your own truck. It can either be shoveled onto the truck or loaded on from above by Mr. Twiss. Call before to make sure it is currently available.

Lane and Son
311 East Mt. Road.
Westfield, MA
(413) 562 3694

Ask for Gary. They have the traprock and rewash- fine particles of silt and gravel. Probably ideal would be a mixture of the two. (3-5 tons traprock float to an acre aplied with 5-10 tons of glacial till to an acre) Gary asks that you call at least a day in advance and let them know you are coming. They always have large amounts of material available at this site.

Lane Construction Corporation
P.O. Drawer C
Northfield MA 01360
telephone (413) 498-2956

Speak with Jim Merold. They have glacial till, 54% going through a 200 mesh screen. Wet, no mask necessary for application. Recommending 3-10 tons to an acre. Cost: $2.50 per ton.

The following are sources that are possibly good and that you might like to investigate. (You are welcome to call me for advice on this):

Quarry sites near the New Hampshire- Vermont line:

Tilcon
Arthur Whitcomb
W. Lebanon, NH
(603) 352 0101

They have what is described as greenstone- meta basalt.

Their Westmoreland site has granite. It is within 10 miles of the Connecticut river.

For more precise information of the NH and VT sites which is not ready as of this printing, send a self addressed stamped envelope to the newsletter, ***SR***, 152 South Street, Northampton, MA 01060.

Safety Masks

For good quality masks for application of extremely fine rock dust call 1-800-356-0783 and request a catalog or write toL Lab Safety Supply, P.O. Box 1368, Janesville, WI 53547-1368.

From Don Weaver

1400 trees planted and remineralized by school children as a part of Earthday

Readers of **Solar or Ice Age? Bulletin #10** (Oct. '89) may recall my mention and attempted 'constructive critique' of the Global ReLeaf project initiated by the American Forestry Association- a main idea being to "slow the warming" and "cool the globe"! I think 100 million trees by 2000 is still the goal for the U.S. California ReLeaf is trying for 20 million. As you know these are far too "modest" in light of the needs shown by the Hamaker thesis and mountains of supporting evidence. Whether anyone at the AFA such as director Neil Sampson (former SCS director and TSOC recipient) is reading the latest 366 pages sent to him as Bulletin 10, I have not heard. (Nor do we know for sure whether George Bush's recent promise to have 1 billion trees/year planted starting in 1990 is related to the number of copies the **Stopping the Coming Ice Age** video which have supposedly made their way into the Bush cabinet, EPA, DOE, etc. That number of trees is a lot less "modest" but still a long way from "enlightened"-- especially as there is still no call for remineralization, total recycling (via composting, etc.) of organic "wastes" and a shift to solar/biomass energy.)

Anyway, to make this report short, when the "branch" named Peninsula ReLeaf (here on S.F. Peninsula) called me to say they were rescuing 1000 fruit trees from burning at two large Central Valley nurseries and I was able to bring some rock dust to give away with the trees to schoolchildren in Redwood City, there was no question this was a worthwhile effort, even if "small"! Fortunately I had enough supply of rock dust from **Rado Rock** and finished compost from here and time to combine them into paper bags (donated by our local Earthbeam Natural Foods) and rush to the two schools to greet the happy and excited young people! Those are certainly "infectious" qualities!

Well, I was glad to see them not only comprehending the need to carefully bring home and plant each bareroot tree, but also the importance of feeding it the rock dust and compost for a healthy soil, tree, Earth and young person. The bags were embraced as enthusiastically as the trees. How is it most adults seem unable to perceive these simple relationships? Yet in the presence of the children and trees and other adults who cared for them, I sensed the teachers and parents present were seeing like children again. Never underestimate the power of "childlike innocence"... Oh, and it ended up being 1300 rescued trees, so some children and adults took two or more. And when Joel Bartlett and the Ch. 7 (ABC) "Naturalists" film crew showed up at the second school, it turned out this small "Releaf" (and ReMineralize) effort was broadcast to perhaps some millions of viewers. It looked pretty inspiring when I watched it the next evening. Being surrounded by the young throngs (What would you like, angel-- peach, nectarine, apricot, plum, apple or fig?"), I wasn't among the organizers interviewed, and a capsule summary of the global crisis and solutions was not attempted. Maybe the pure excitement of the children contrasted with the awareness of our dying life-support systems will spark in the viewers essentially the same energy I would hope to inspire with my words. As a last footnote here I'll mention a nice thank you letter I received from Peninsula ReLeaf coordinator Dave Muffly which said "I would like to see rock dust included in all our future plantings. I see it as a great tool in introducing people to some of the basic concepts of ecology along with helping the trees to grow." They've also added **Stopping the Coming Ice Age** to their video loan collection which includes **The Man Who Planted Trees,** one on St. Barbe Baker, etc. I wish there was space to tell you about the California Arbor Day presentation on March 7th at the Belmont Library organized by my beloved friend and librarian, Cathy Cheek but you can imagine talks by Dave Muffly and Smoky the Bear, a play of "The Giving Tree" (you've seen Shel Silverstein's classic "children's book"?) with 5'5' Cathy as "Boy" and 6'6" Don as "Tree", naturally, and about 100 oak trees, children (many of them beautiful "brownies" in uniform!), Adopt-A-Tree certificates, and bags of rock dust (Adopt-A-Few Billion Microorganisms?) and in honor of Luther Burbank's birthday, we planted a flowering crabapple in front of the library. You should have seen the children spilling over each other to throw many handfuls of rock dust and compost into the planting hole! I'm predicting the world's healthiest crabapple tree.

Order remineralized seeds for your garden

The 1990 Catalog of Seeds ($4.50 postpaid) is too important and exciting a discovery to cover in this small space, along with the important concept of Coevolutionary gardening developed by Dr. Alan Kapuler and Olaf Brentmar. Order the catalog which describes it all in detail.

The seeds fall under such headings as organically grown, wildcrafted, heirloom, endangered and medicinal and are for those concerned about a healthy and sustainable diet. They are divided into "kin-doms", rather than plant kingdoms.

The remineralized seeds are produced by John Sundquist at Rivers Turn Farm.

Peace Seeds
A Planetary Gene Pool Resource and Service
2385 SE Thompson St.
Corvallis OR, 97333

A project to promote soil remineralization
and improve High School Science Education

High School Redirection *in Denver*

involving students in scientific environmental research- testing the merits of rock dust in agriculture

by Gary Huber

The question everyone seems to be asking this year is, "Why don't Johnny and Mary want to learn science in school?"

It is amazing that the answer to that question can elude anyone who knows kids and who even dimly remembers their own high school science experience. Young people, after all, do have similarities from generation to generation: They want to make a difference in the world and they are bored by meaningless repetition! Science lessons today, the same ones taught for decades, have little relevance to the students of 1990. Why are today's students still treated to the same bunsen burner experiments that were already dated when our grandparents first saw them? Perhaps the purpose of these redundant "experiments" is to introduce students to something called"the scientific method", but couldn't that be accomplished in a more interesting, useful and creative fashion? Couldn't they be doing some "real science" and learning the same lessons far more effectively:

"Yes," comes the defense, "but 'real science' is rather expensive. Where is the high school that can afford a super-collider to teach physics or a radio telescope to teach astronomy?" Even a moderately equipped science lab is out of the financial reach for many schools. Those school districts that can afford the equipment to teach science are certainly not the ones where the need is greatest. Less affluent schools where the students are "falling through the cracks" and all too often end up on the streets selling crack, are where additional stimulus is most desperately needed and where it appears to be furthest from reach.

Recently, while pondering this conundrum and others, including our current agricultural and environmental dilemmas, a solution came to mind: a holistic solution that addresses these problems and a few others as well. Following is a brief summary of the project as it is being translated into action by one of the alternative high schools in the Denver Public School system.

High School Redirection, as this innovative school is called, has eagerly agreed to take on this experimental project which involves real scientific research on the use of ground rock (rock dust) as an environmentally sound agricultural soil amendment. Our hopes are that it will serve as a pilot for similar programs across the country involving high school students in environmental research. There is no reason why, with proper direction, young people cannot contribute greatly to solving the problems which they are soon to inherit.

The Experiment

Through the program students will learn to see science, not in isolation, but in the context of society. They will study environmental issues and learn about the role of chemical fertilizers and pesticides in degrading the very water they drink. They will study the atmosphere and learn about the connections between soil fertility, forests and the over-abundance of greenhouse gases that threaten worldwide food supplies. They will study the soils and learn how the threads of geology, biology and chemistry are interwoven and inseparable. They will hear from a local businessman, a farmer and a soil scientist, all of whom would derive benefit from the research. Students will gain insight into the roles these three beneficiaries play in the instigation of scientific research.

The Media Component

While this is only a brief summary of the project as it is currently envisioned, I think you can begin to see the potentially wide ranging benefits it presents. We would like to take one further step toward assuring the widest possible spread of those benefits. That is, we would like to produce a video documentary of the entire process, from initial discussion between students and advisors, to the final analysis of results. Our intention here is threefold.

One - it would facilitate the transfer of information concerning the nature of this project to other schools, hopefully inspiring similar projects across the country.

Two - it would help us spread the good word on rock dust to farmers, foresters, ecologists, legislators and anyone else who should care.

Three - it would enlarge student interest in the project. Since student participation is voluntary, every means at our disposal must be used to recruit their support.

Unlike most schools, where student involvement is dictated by faculty and standardized curricula, at *High School Redirection* students have a choice to participate or not as they wish. A small group of students already active in environmental studies will welcome this opportunity, but our goal is to solicit the involvement of those students who do not already have such an interest. As stated at the beginning of this article, students have a need to feel important, that what they do really matters. One of the ways modern society confers a sense of importance upon someone is by focusing a news camera on them. While we do wish to engender in students a more permanent sense of self worth, that cannot happen if they do not get involved. They must be assured at the onset that their project is NEWS. Our first priority must be to insure a quality learning experience for the students. Participation in the making of a video documentary will heighten that experience.

This project invokes a three way synergy. Science education benefits the student, the students help to advance science and media coverage expands the impact of both.

While emphasizing the educational aspects of the project, the video will clearly convey the basic concepts of soil remineralization and document the experimental results. Those who have wished for a way to present the rock dust thesis to government officials will appreciate the logic of using a standard legislative practice. People who ordinarily have no time for something as pedantic as rock dust will find time to watch a program on science education. Rock dust will gain an audience as a rider on the education program.

Depending on the availability of financial support, a sister program could be produced with the emphasis on remineralization. It could delve to greater depth on the underlying principles, using computer graphics to portray complex soil processes in readily understandable form. The many field trials being undertaken in this country and abroad should be documented for broader appreciation as well. Remineralization may be portrayed as a timely solution to some of our most perplexing environmental problems without prejudice to any particular climate model.

Through the program students will learn to see science, not in isolation, but in the context of society... They will study the atmosphere and learn about the connections between soil fertility, forests and the over-abundance of greenhouse gases that threaten worldwide food supplies. They will study the soils and learn how the threads of geology, biology and chemistry are interwoven and inseparable.

We are fortunate in Denver to have a research soil scientist at the U.S. Geological Survey who has an interest in rock dust's potential and has committed to helping the students design an experimental procedure that is both valid and practical. Several sources of rock dust are available locally: basalt, rhyolite, river gravel and gypsiferous shale. One local quarry representative is strongly supporting the idea of rock dust research. He will speak to the students on the entrepreneurial relevance of the program.

On the consumer side of the rock dust equation, one of the largest Colorado produce growers has invited the students to visit his farm. He will discuss his efforts toward maintaining soil fertility while reducing the environmental impact of his operations. He is actively carrying on his own research and may implement rock dust trials pending the outcome of the students' research.

Although the details of the experiment are to be determined by the students in collaboration with scientists and advisors, we anticipate that it will consist of three basic parts. The first, a short term experiment, will be a greenhouse pot test. A number of rock types and derivative combinations will be tested against control soil samples. The soils will be collected on the farm during the field trip mentioned above. The dust samples will be screened to obtain size consistency. Due to space limitations, not all variables can be tested simultaneously. This will provide future classes ample opportunity to pursue original research while providing confirmation of the initial results. It is in precisely this manner that research proceeds at academic and commercial institutions. Here again the student's experience is grounded in reality.

The second, or mid-term experiment, will involve gardening projects in which students will appraise the same rock materials under less ideal outdoor conditions over a growing season. In order to avoid the problems a novice gardener is apt to encounter in our peculiar high plains climate, a group of experienced gardeners will be enlisted to oversee this part of the effort. Since much of this experiment will take place over the summer recess, the veteran gardeners will provide continuity that might otherwise be lacking. As an added benefit to this approach, the group of gardeners will be a witness to the rock dust legacy.

The third experiment to be undertaken will involve the planting of trees. Trees, with their long-term nutrient requirements, will provide one more way of evaluating rock dust's efficacy. This in fact could prove to be the most telling part of the entire experimental project. It will require ongoing documentation for many years, again providing future classes opportunity to participate in a meaningful way. Tree plantings on public land (such as city parks) will provide tangible results for all the town to see. The trees will remain a source of pride and inspiration for those students who plant and tend them, reminding them daily that they can make a difference in the world.

Financing

The cost of video production, as you are well aware, is rather substantial. Normally such programming would be produced with private funds and sold for profit (if a sufficient market exists) or with grant funding. Since we have no private funds, nor is there any likelihood of profit, the first option does not apply. The second option, grant funding, may be a possibility in early 1991 but that will be too late to be of practical value.

The school project will begin in April of 1990. In order to maximize the value of the experiment, shooting must commence in April as well. We do not wish to produce a docu-drama in which events are simulated after the actual occurrence. We want real live coverage, capturing the spontaneity of the events, the students' enthusiasm, the problems, the resolutions - everything just as it really happens.

In order to realize this dream in which we all hope to share - a world in which all are well nourished in body, mind and spirit - we must all find ways to contribute. Everyone reading this newsletter is making at least one contribution already: You are showing your support for the newsletter, and that you believe in the potential of Soil Remineralization. Another valuable way in which you can help bring to focus our mutual dream is to help fund the programs discussed above. Your contribution need not be large. We will do everything we can to stretch the dollars we receive. Our goal is to raise a sum of $20,000.

Every dollar you contribute will be spent directly on production. Director Robin Olds and producer Gary Huber, with a combined experience of over 40 years in the film and video arts, will assure very high standards of production.

If you contribute to this project you will have more than the satisfaction of knowing that something worthwhile is being carried out in your name. We will endeavor to keep the channels of communication open and share with you the progress and excitement from month via a brief newsletter.

In Summary

We have all complained upon occasion of the lack of decent television programming. We must understand that the power to remedy that complaint lies with each and every one of us. We must create and support the programming we want to see. We cannot wait for someone else to take the initiative. It is all up to us, and now is the time!

Please send contributions or requests for further information to:

Gary Huber
Questar Productions
1058 Weld County Road
23.5
Brighton, CO 80601
(303) 659-4028

And A Word of Thanks

We wish to acknowledge gratefully Jack Miller, whose diligent efforts to advance the status of soil remineralization have resulted in this most promising endeavor. May all his many endeavors be equally blessed.

Have you wanted to try *soil remineralization?*

by Jan Brewer

A Doctor friend and his wife became very interested, after reading **The Survival of Civilization** several years ago and went immediately to the local gravel quarry, where they ordered twenty tons of the finest crushed rock. The crushed rock was dumped in the middle of their driveway and it took them two weeks to move it by wheelbarrow to the garden and dig it in.

With the ever changing weather patterns and rainfall, they were totally unable to note any difference in their garden after the first year, and lost all interest in soil remineralization.

I see only two things wrong with their approach: 1) They had no way of knowing how much of the rock was 200 mesh fine dust which could be used rapidly by the soil, and 2) They had no idea if the rock type used was of any benefit to their soils. By doing pot tests with a few pounds of ground and sieved rock dust they might have saved themselves lots of work, located a suitable rock type, and might now be enjoying a much more productive garden.

What do you need to run comparative pot tests on various samples of local rock?

Scout your area for suitable rock in stream beds, at gravel quarries or along road cuts through the mountains. Pick up a few pounds of rock at each site and place them in sacks or boxes with clear labeling of where the samples came from. You can add samples by buying small sacks of crushed rock at your local building supply company.

You'll need some way to pulverize each sample. Any hammer and a metal plate will work. Be very careful of flying rock chips (wear safety glasses). There is a commercially available giant hammer and plate made for pulverizing rock, called a miller and bucking board. The miller is $121.00, and the bucking board is #396.00 from Bico, Inc. (see list of suppliers below). You may find the bucking board unnecessary if you can find a heavy piece of steel plate at your local scrap metal dealer.

You can also pulverize small samples with a mortar and pestle. A one-quart capacity mortar and pestle is available from Bico, Inc. for $75.00, or a four inch size cast iron mortar and pestle can be had from Action Mining Equipment Services, Inc., Order #2806 for $34.95. Or you can make your own mortar and pestle from pieces of aluminum pipe and pipe caps.

Action Mining also has a Hand Operated Ore Pulverizer, order #2836 for $56.90, which will grind to 200 mesh, and a Laboratory Impact Mill, Order # 5005, which will grind about 100 pounds per hour to finer than 200 mesh, for $559.00.

For those of you who are mechanically inclined, several do-it-yourself pulverizers have been described in back issues of ***Popular Mining*** magazine (write for index of back issues). See Resource List below.

Next you will need to screen each sample of the ground rock to 200 mesh particle size so your pot tests can be compared. 200 mesh screens and ready-made sieves (which are more expensive) are available from Action Mining, Order #6086 Brass 200 mesh screen sieve, $23.10. They are also available from Abundant Life and W.S. Tyler, Inc.

You may wish to test your sample against commercially available rock dust, so sieve each sample to 200 mesh fineness. Commercial rock dust is available from Mountain Ark Trading Company. Called Nutra-Earth, a 50 pound bag is $29.99 plus $4.95 shipping and handling. Rock dust is also available from Blue Mount Quarry, called Earth Food Rock Dust, at $26.95 for 50 pounds, plus $4.50 shipping and handling. There are many other sources.

Now that you have pounded or ground each of your rock samples, and screened each to 200 mesh dust, I suggest you use identical pots for your pot tests.

Mix enough of your soil thoroughly with humus for all of your pots. You may want to use two or three identically mixed pots of each rock dust sample.

Measure out one pot full of soil/humus mix, add one teaspoon of one sample of your rock dust and mix thoroughly. You may want to use more than one teaspoonful, but keep the amount of rock dust the same for all tests. Mark each pot as it is prepared, to identify the dust sample. You may want to do pot tests with two or more dust samples mixed, but keep the total amount of rock dust the same in all pots. Retain some soil/humus mix without any rock dust for your two or three control pots. You now have a series of clearly identified test pots.

Let's say you've found three rock samples you want to test, and have one commercial rock dust sample. With two pots of each, you now have ten pots, including two controls. Plant each with the same number of seeds of the same variety of plant, from the same seed packet. Tend and water these test pots in as nearly the same manner as possible, and grow them to maturity. Note and measure the growth rates, the amount of fruit harvested, and compare the taste of the resulting fruit. You will now have a fairly good idea if your locally available rock sources show promise and are worth exploiting for remineralizing your garden.

For more rock dust grinding capacity, check out information in mining journals, prospecting and mining supply companies, rock processing supply companies and journals.

I hope to provide you with a list of additional and larger rock grinding equipment and a list of plans for building your own rock grinders for the next issue. If you find a local source of rock that produces marked improvement in plant growth, consider setting up a grinding, packaging and distributing operation for your neighbors and for the surrounding area. Used rock grinders are often available at quite reasonable prices from ads in mining and rock processing equipment journals. It could be a business of benefit to you, your community and the planet.

Rock Grinders

Action Mining Equipment Service, Inc. and Sieves 4460 West Reno Ave., #D, Las Vegas, NV 89119 tel. (702) 362-1511. Ask for catalog of new and used equipment***Popular Mining Magazine*** (same address as Action Mining.) Ask for Jan./Feb. 1990 issue and index of back issues for rock grinder plans.

continued on page 34

From
Popular Mining Magazine

A Low Cost Impact Mill

by
Glenn Boucher

The titled article appeared in the June 1989 issue of ***Popular Mining*** (#32). In reply to numerous phone calls and letters he has received with questions about it, Mr. Boucher has responded as follows:

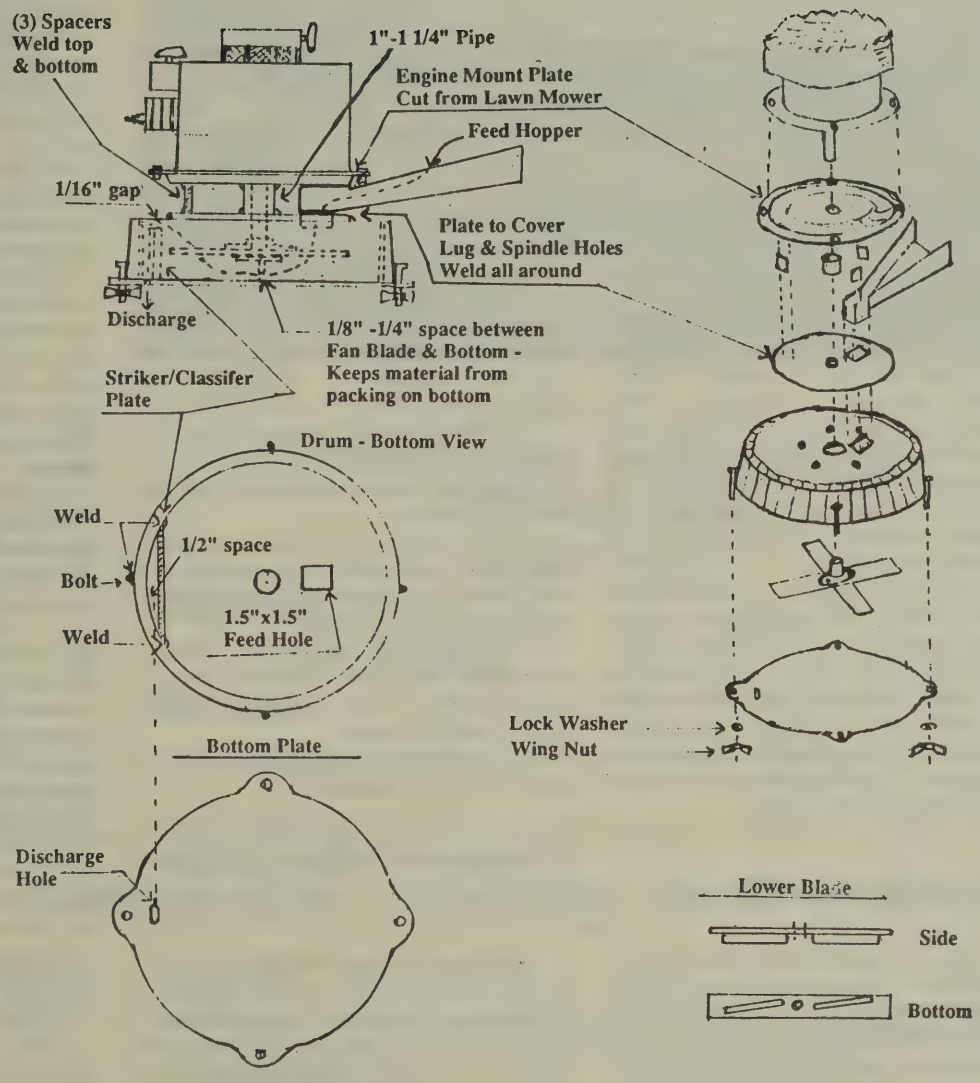
They all wanted clarification on one thing or another, and all asked about plans or drawings. Since the weather has finally chased me out of the hills, I sat down to make the drawings. It certainly isn't the ultimate mill but using what I had at the time, it fulfilled a need and still does, as it's still in use. That's the real message I was trying to convey. While I'm no draftsman either, hopefully, this will help to clarify the problem areas.

Measurements for everything have not been included because the same size of brake drum may not be available to others. Other things could also be changed, such as using pipe, or square tubing for the feed chute; or using only one blade and welding the fan fins onto it.

If these drawings are published they may help to get me off the hook. Thanks for a great magazine with so many useful articles and ideas.

Drawings for
Low Cost Impact Mill
(article published in PM #32)

by Glenn Boucher



This information on the "Low Cost Impact Mill" was included in the Jan/Feb 1990 issue of ***Popular Mining*** *(#36) and reprinted with their permission.*

Rock dust producers should join forces for promotion, protection and to insure high standards of quality.

Recommending
A Trade Association
for Rock Dust Producers
by Bertram Cohen

drawing by Steve Johnson

A few companies are now producing rock dust in the U.S. and others are moving to enter the field. This is a welcome development and prompts the following thoughts:

The increase in sources is very welcome but there is no coordination among the producers, and that fact has a downside which should be considered. There could soon be a fair number of operations, some small and some larger, which claim to offer rock dust as recommended in the HamakerWeaver literature. The product composition will likely vary from company to company. The buying public could be confronted by an array of competing companies with different products all claiming to be genuine rock dust.

Under the best of circumstances results will vary with local conditions, product variations and application methods. It is also possible that some producers will offer products that do not have the proper mineral mix to qualify as genuine rock dust. This situation can lead to the following difficulties:

1. Customers with the wrong product or wrong methods will be dissatisfied.
2. Companies will compete for the existing limited market rather than concentrating on expanding the total market.
3. Government may feel prompted to 'regulate' a confused situation and impede progress with bureaucratic red tape.
4. Chemical fertilizer producers may be tempted to discredit rock dust.

It would seem appropriate for all producers of rock dust to form a voluntary trade association with the following purposes:

1. Set product standards to determine what constitutes an acceptable rock dust product by composition, mesh size, poisture, etc.
2. Standards can include combinations of rock dust and other components such as soil, organic matter, special bacteria, etc.
3. Standards can also include application procedures.
4. An association label or logo on products of various companies will offer customers some assurance of quality standards and grading.
5. An association can facilitate cooperation to promote jointly the remineralization concept and rapidly expand the market.
6. An association will discourage poor quality producers and increase sales via increased customer confidence.
7. An association can better withstand predatory actions from the chemical fertilizer industry and possibly unfair actions by government agencies.

The forming of an association will have to be a spontaneous action by the rock dust producers themselves. This short commentary can only serve to alert producers to this idea. ***SR Newsletter*** can offer this message to the network in the hope that it will be heard and considered.

Congress Takes Notice!
Emergency Climate Stabilization and Earth Regeneration Act of 1989

This proposed bill, brought to the House of Representative in November, 1989 by the Hon. Ronald V. Dellums of California, is the first legislation in the U.S. (or any country) to place the problem of climate change in its full context of growing intensities of heat and drought in the lower latitudes, and increasing cold, clouds, snow and ice in the higher latitudes. It calls attention to the full cycle of climate change, to the effect on our food supplies, and makes recommendations as to the extent and timing of the necessary solutions.

Representative Dellums' bill is in the sense of the united Nations Resolution, submitted by Malta and passed by the General Assembly on December 6, 1988, entitled **Conservation of Climate as Part of the Common Heritage of Mankind.** There are a number of groups working toward international legislation to respond to the full warming/cooling climate cycle and solutions commensurate with the problem.

This bill calls for a working document which will serve to integrate all activities related to climate stabilization, including C0 decreases year by year (the C02 budget), on Federal, State and local levels.

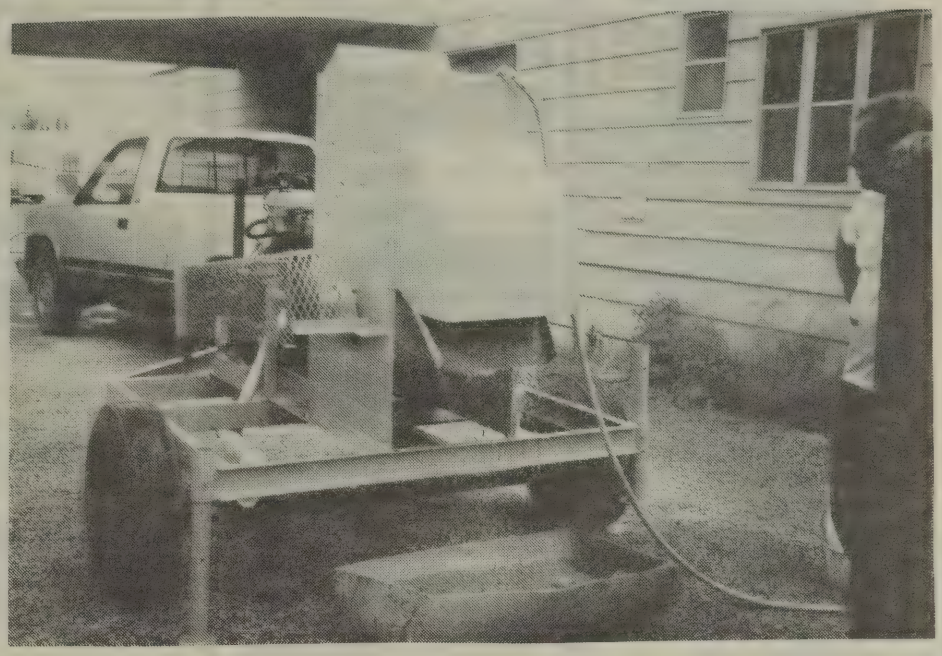
The full text of the discussion draft of this legislative initiative can be read in the *Congressional Record* of November 21, 1989.

Alden Bryant
Earth Regeneration Society
1442A Walnut St #57
Berkeley, CA 94709
(415) 525-4877

Harvest Technologies Grinder

Bruce Miller

A New Mobile Low Cost Mill for starting a rock dust business



The Harvest Impact Grinder, which can be built to the capacity required by the client, was originally designed for the small miner to grind quartz. It is therefore rugged, low maintenance and dust free. It is also competitively priced and not available elsewhere. Being trailer mounted, it is easily transportable to most sites.

We must try to ensure that potential clients realize the implications of this business. For example, the following ancillary equipment is needed:

a) Hopper to control feed of rocks to grinder

b) Bagging unit to prevent fine rock dust from affecting workers

c) Device to spread on field

d) Roofed work area

Moreover, they must be certain of the analysis of the rock they are grinding, otherwise they are spending good money to grind or spread inert material on the soil. This means they must learn to take accurate analyses of the material they propose to grind. Analyses that are valid have to be taken *very* carefully.

Lastly, they must have a chart showing usual trace elements and/or minerals in basic rock types.

This unit shown in the photos is the unit shipped to Ghana to work on 3" goldbearing rock. A 30 ton unit is under construction.

Anybody who contacts me to inquire about the grinder will be counselled accordingly. They should prepare a well thought out business plan to determine feasibility of this specific opportunity, using above guidelines, before buying a grinder.

For further information contact:

Bruce Miller
Harvest Technologies Inc.
331 Palmerston Blvd.
Toronto, Ontario M6G 2N5
Telephone (416) 962-4995
Fax: (416) 792-8116

HARVEST PORTABLE IMPACT MILL

Specifications

Output: 3-6 tons per hour
80% - 150 mesh pass
20% - 20 mesh pass

Input: 3" size

Water Induction: 3/4 hose 1/2 open

Weight: 2080 lbs.

Trailer Mounted

Motor: 25 H.P. (Motor included in quote)

Models: Built to client's requirements

Maintenance: Remove to build up blades every 100-800 hours, according to hardness of rock. This takes about 1/2 hour if one has welding unit.
Grease fittings daily.

Weekly oil change for motor

Description: Rocks drop over rotating 4' blades (square) made of armour steel, and then hit static plate. Shaft on which blades are mounted is belt driven from engine. Pulverized material passes through 3 screens, the last one 200 mesh.

Price: U.S. $16,500 FOB Factory (including motor)

International Gravel and Rock Dust Sources

Write for newly expanded Gravel Sources in 33 States and Canada

If you live in one of these states you can help us contact gravel sources in your state to determine whether they would be likely sources of gravel dust:

MI, MN, MT, UT, NV, CO, NJ, PA, MD, NY, DE, AL, MS, FL, AZ, NM, IA, KS, NE, ND, SD, SC, NC, GA, VA, MA, NH, VT, ME, CT, RI, CA, OR, and Ontario, Canada. For a list of gravel sources in your state (one of the above), send a self addressed stamped envelope (Large manila with 65 cent stamp to David H. Miller Department of Biology, Kettering 103 Oberlin College, Oberlin, Ohio 44074-1082.

Mineral Health Supplements

Boddy Toddy
Rockland Corporation
Tulsa, OK 74128
(918) 437-7310
(800) 331-3659

For **NOVITT** mineral health supplement from a mine in Poland disscovered by Prof. Jan Nowacki call 1-800-522 4279. Looks interesting, rather expensive.

Sacred Spring Marketing
P.O. Box 1226
Park City, UT 84060
(801)649-0322
Clark's Formulas..

See Elemite for former Azomite product which may be soon available again as a supplement. Super Blue Green algae from Cell Tech Inc., Klamath Falls, OR and KM are excellent mineral supplements based on plant sources. Super blue-green algae comes from a remineralized glacier fed lake. Also, see Maine Seaweed.

For Agriculture and Forests

Blue Mount Quarry
17701 Big Falls Road
Whitehall, MD 21161
Dept S.O.L.
(301) 343-0500
Earthfood Rock Dust and Rock Dust/Compost Mix.

Brookside Farms Lab
for mineral analysis only
Director Mark Flock
308 S Main St
New Knoxville, OH 45871

Clodbuster- Fertimax
Leland Taylor
701 Madison St N.E.
Alburquerque, NM 87110

Davidson Mineral Properties
Gene Rice, Inside Sales
P.O. Box 468
Lithonia, GA 30058
(404)482 7231
This is the granite quarry, the dust by-product of which was formerly sifted to become the product Hybro-tite.

Dr. Soils Glacial
Jon Biloon
Box 891
Captain Cook, HI 96704

Earth Circle
P.O. Box 6123
Littleton, CO 80121
(303) 850-0689
Earth Circle is a grassroots group in Denver which is dedicated to getting the word out on rock dust. We have purchased (on consignment) a large quantity of rock dust in 50# bags from a local supplier. (U.S. Soil)

Ele-M-ite
Kelly Park
8790 Blue Jay Lane
Salt Lake City, UT 84121
(801) 278-5328
for agriculture and health supplement- Azomite

Be Evergreen
P.O. Box 7101
Carmel, CA 93921
(408) 624 1433
A gravel source for your houseplants and flower pots. Will send 3 lb packages for $3.00 plus shipping (C.O.D.). 50 lb bags are also available.

Henry Fleischman
36 Union St
Guilford, CT 06437
Contact person for the Connecticut area

Flora-Stim
Strite's Warehouse
P.O. Box 128
Greencastle, PA 17225
(717) 597-3325

Robert Gephardt
Itasca Community College
1851 E. Highway 169
Grand Rapids, MI 55744
(218) 327-4460

Kingston Traprock Co.
Dept. 1
Kingston, NJ
Dia-King diabase rock powder. Write for info.

Laurence Lynch Co
Falmouth, MA 02540

Maine Seaweed Co.
P.O. Box 57
Steuben, ME 04680
(207) 564-2875
Sea vegetables and garden fertilizer.

Michigan Aggregates Corp
996 East Chicago Rd
Jerome, MI 49249
(517) 688 4414
This source is recommended by The Society for an Extended Ethic.

Mt. Ark Trading Co.
Fayetteville, AR 72701
1-800-643-8908
50lb bag Organic NUTRA-EARTH (ELX Rock dust) Item 10045. $29.00 + shipping.

The Notch (Lane and Son)
Rte 116
Amherst, MA
A source of traprock, very fine (3-400 mesh) basalt that may be similar to San-Vita product in Austria used for regenerating forest in Brixlegg. Also recommended for sugar maples.Used and recommended by editor, ideally in combination with glacial mix. Must wear mask if applied dry! Another larger quarry with traprock located in Westfield and glacial til (contains some loam, but mainly rock dust) in Northfield. only available wet.

Pacific Rim Soil Additives Unlimited
P.O. Box 60183
Fairbanks, AK 99706
(907) 479-8941

Peak Minerals-Azomite Inc.
101 N Tejon, Suite 200
Colorado Springs, CO 80903
(719) 635 8000

Rado Rock
Yvonne Rado
P.O. Box 278
McKenna, WA 98558
(206) 458 4188
Newly formed company for California, Oregon, Washington and the Western States for sources of gravel dust.

Judy Roylance
Rt. 1 Box 1398, Dogwood St
Sag Harbor, NY 11963
(516) 725 1009
See network list for description.

Tilcon Massachusetts, Inc.
attn: Tim Kelly
72 Main St. P.O. Box 114
Acushnet, MA 02743
Called clarifier material. &3.4% going through 200 mesh. Desc: Metamorphic rock; dark green to black to white chlorite-biotite schistose gneiss; derivative of an original quartz-felspathic material.

Trace Minerals Marketing
Organic Life Soil Min
300 Fremont #113
Las Vegas, NV 89101

Peaceful Valley Farm Supply
11173 Peaceful Valley Rd
Nevada City, CA 95959
(916) 265 FARM

U.S. Soil
7595 W. HWY 50
Salida, CO 81201
(719)539-6611
Fax (719)539-4936
East coast distributor:
Tom Whitesell
Star Route, Box 165A
Canton, NY 13617

Mark Williams
New Earth Products
Route One, Horatio AR
71824
(501) 832-2444

Vulcan Materials Co
SR has not confirmed the quality of the sources listed.
Edmund Redd
P O Drawer 1590
Manassas, VA 22110
(703) 631 2060
Various rock sources.

Mickey R Love
P O Box 4195
Winston-Salem, NC 27105
(919) 767 4600

J Lloyd Sentell
P O Box 7
Knoxville, TN 37901-6001
(615) 579 2903

John T Douglas
500 West Plainfield Rd
Countryside, IL 60525
(312) 482 7000

Dick Bade
1127 South Chicago Street
Joliet, IL 60436
(815) 726 5285

Daniel Roadruck
P O Box 5529
West Lafayette, IN 47906
(317) 743 2175

W Max Stephens
P O Box 80730
Atlanta, GA 30366
(404) 458 4481

Hal C Stokes
P O Drawer 8834
Greenville, SC 29604
(803) 2772371

Alan C Stanfield
P O Box 7324-A
Birmingham, AL 35253
(205) 877 3642

Pat D Kerry
P O Box 29310
San Antonio, TX 78229

Australia

Australian Mineral Fertilizer
Hendon Industrial Park
113 Tapleys Hill Rd
Hendon 5014
Western Australia

Natural Mineral Fertilizer
Norm Todkill
21 Blackwood Ave
Morningside 4170
Brisbane tel 07 399 1230

Austria

Bioglück
A-3950 Wielands
tel 02852 2414

Diabaswerk
A-5760 Saalfelden
tel 06582 2373

Firma Diwoky
Frachtenbahnhof Gersthof
A-1180 Vienna tel 472241

Firma Gleichenteil
Gleichentheilgasse
A-1230 Vienna
tel 672193, 672194

Kärnter Basalt
Kampach, St. Paul
Lavanthal

Konrad Planegger Diabas Werk
A-9134 Launsdorf
tel 04213 2044

Sanvita Hartsteinwerk Kitzbühel
Attn: Mr. Abermann
Postfach 44
A-6370 Kitzbühel
tel 05356-4333-0

Robert Schindele Furnierwerk
Kicking 18
A-3122 Gansbach
Superbiomin

France

Societe de Carrieros de St. Nabor
67530 Ottrot
St. Nabor
tel 88958114

Germany

Basalt Vertriebgesellschaft mbH and Co KG
Südniedersachsen
Bramburg,
D-3404 Adelebsen

Basaltwerk Wiesau/Opf.
250 Maclellan Bldg.
Triebendorf

Firma Ernst Otto Cohrs
Postfach 1165
D-2720 Rotemburg/
Wumme**Firma Hauri KG**
D-7805 Botzingen/
Kaiserstuhl

Lava-Union
D-5485 Sinzig/Rhein
Kölner Str.22
Tel: 02642-4010

Porphyrwerke Weinheim
Shriesheim AG
Postfach 1609
D06900 Weinheim

Schotterwerk
D-7613 Hausach/ Hechtsberg

Switzerland

Bertrand Rime
1751 Middes
Fribourg
tel 037 681335

Bioticino
V. Gautschin, V C Molo 1
6500 Bellinzona, Tessen
tel 092 262 984

Firma Otto Gamma AG
Seestrasse 336
8038 Zurich
tel 02 832765

Johann Wenger
Muller Poffetmuhle
1717 St. Ursen
Fribourg tel 037441173

Maurice Schillinger
Garten Center, Rte Suisse
1196 Glant, Vaud
tel 022 642267

Wytor SA
1628 Vuadens, Fribourg
tel 029 28280

Zimmerli Mineralwerk AG
Hohlstrasse 500
8048 Zurich
Tel 01/432 10 40

United Kingdom

List of 80 quarries in U.K.
Redland Aggregates Ltd
David Langley
Technical Manager
Bradgate House, Groby
Leics. LE60FA

College of Soil Research
Eileen Moore
5, Chase Side Place, Enfield
Middx. EN2 6QA
tel: 01 363 8615
Sells several kinds of rock dust for agriculture and Austrian Superbiomin mineral powder for internal use.

Rock Dust-Remineralize the Earth
Bumper stickers
A beautiful sky blue and white background with a green tree in the middle. They cost $2.00 each retail, and 75 cents each for large purchases (50 or more), for fundraising for your group. Make check out to:
Earth Circle, P O Box 150753, Lakewood, CO 80215, (303) 988 4359.
editor: These bumperstickers are really beautiful and I recommend ordering them for yourself and friends!

People For A Future

To order the book **The End** ($12.00 ppd) and the video ***Stopping The Coming Ice Age.*** ($32.95 ppd). Ca residents add state tax.
People For a Future
2140 Shattuck Ave.
Berkeley, CA 94704
Dial 1-800-441-7707 or (415) 524-2700 in California

Hamaker Weaver Publishers

Order the book
The Survival of Civilization
($12.00 ppd.)
The Solar or Ice Age? Bulletin #10 (366 pg.)
Suggested minimum donation $10.00. CA residents add state tax.
Hamaker Weaver Publishers
P.O. Box 1961
Burlingame, CA 94010
(415) 347-9693

Elemite Rock Dust

The A+ alternative for poor soils and inadequate nutrition

by Kelly Park

To yell "Wolf!" when there is no wolf is unforgivable.

But NOT to yell "Wolf!" when the entire ravenous pack is attacking in full view is an affront to humanity.

John D. Hamaker cites the three main problems of our time:

(1) the increase of carbon dioxide in the atmosphere; (2) the money crisis; and (3) how the world population is placing exhaustive demands on world resources. It took advancements in space for us to finally get it that the resources contained on this planet are fixed, measured, and non-replaceable, while the population explosion continues and is expected to double every thirty years. It is precisely this set of conditions that caused Dr. Hamaker to write, "As a result, civilization has been brought to the verge of extinction with virtually no knowledge of how to avoid it."

Since the early part of this century, agriculturists have been aware that the soils of this country are deteriorating. Humans are not getting the nutrients they need from food our soils produce and neither are milk and meat-producing animals. Vitamin and mineral supplements added to our diets in the form of capsules and pills can't replace the natural nutrition of good food, grown in soils that supply all the needed ingredients for good health.

Why have the soils become so "anemic?" Trace elements added to the soil by nature's slow process of rainfall, deteriorating grasses, roots and rocks disappear faster than nature can replenish them. Top soils are eroded away by flooding and drain off into rivers and oceans; acid rains pollute the atmosphere; overuse of land results in poor crops; chemical additives, pollutants, and non-biodegradables dumped and buried in the earth contaminate soils for who knows how long? Nature can't rebuild as fast as man destroys. Because of these factors, the world is becoming less and less capable of producing enough food to feed its population.

What can be done? We at elemite Minerals, Inc., see our product as supplying most of the answers. Let us tell you why.

Elemite has 70+ minerals and trace elements in a naturally available balance. We believe that by adding this large number of minerals and trace elements to soils, animals and humans, the deteriorating processes can be reversed.

Elemite is a colloidal silicate of the Montmorillonite group, a completely natural product which has been around for at least 20 million years. Tests undertaken by users of colloidal silicates such as Elemite over the past 46 years have proven that minerals and trace elements contained in this colloidal silicate will improve human health, increase productivity in soils, and enhance quality of poultry and livestock.

Conservation of water through the sustained use of Elemite is well known.

It appears that because of Elemite's colloidal characteristics it does not need to be chelated. Elemite's composition is such that it is immediately available to plant rootstructures. It has shown exceptional results in poor soils. It is felt by some that when added to livestock feed, the use of steroids and antibiotics may no longer be necessary.

Currently, studies are underway in hydroponics using water and Elemite Rock Dust exclusively, with anticipated furture use of such agricultural procedures not only on earth, but in space as well.

Tests have been completed by Dr. Bob Warnick of the Experimental Station of Utah State University, in conjunction with a large Utah feed company, on turkeys being readied for next year's market. Results were systematically noted and will be published in the near future.

Soil tests using Elemite Rock Dust on large plots of ground are being conducted with farmers in the Northern Utah area in cooperation with Utah State University. Locally, a Parks and Recreation Department has achieved excellent results with our product in restoring vitality to grass areas killed by overuse of chemicals. They plan to expand testing to include trees and flower beds.

Farmers and ranchers have undertaken feeding programs using our product. Results are beingdocumented for future use. Tests are continuing among a portion of the dairy industry in Wyoming, as well as being applied to the soil through drip-type irrigation procedures. Conservation of water through the sustained use of Elemite is well known.

Soil tests using Elemite Rock Dust on large plots of ground are being conducted with farmers in the Northern Utah area in cooperation with Utah State University.

None of the results obtained and documented above will be nearly as dramatic as the ones that will be obtained by you when using Elemite Rock Dust on your plants and gardens. Remember, what you give to the soil returns a hundredfold to your body.

The "wolf" has been identified and we know of no one who will offer arguments to the contrary. Despite the gloom that environmental studies continue to expound, there are many things that can be done. But probably the most important would be to nourish, replenish, and reestablish the most precious resource of all--our soils; for in the final analysis, the whole of humanity (3 billion plus) are supported and sustained by a minimum of two inches of top soil, the sun, and a little rain.

Note: Elemite and Azomite are the same rock.

ELEMITE ROCK DUST

"Remineralize rather than chemicalize"

- Over 70 minerals and trace elements in a natural colloidal state with a positive and negative ion exchange.
- Increases both quality and quantity.
- Holds moisture- saves water
- Non-toxic- restores pH balance.

With ELEMITE ROCK DUST you will raise better seed potatoes in Maine, better grapes in California, and more nutritious crops in all states.

For more information contact:
ELEMITE MINERALS INC.
8790 Blue Jay Lane
Salt Lake City, Utah 84121
Phone (801) 278-5328 942-0895
$15.OO per bag
Shipping costs quoted
44.5 lbs. net wt.
Please allow 2-6 weeks for delivery

John Hamaker Replies
Does Feldspar cause cancer?

Feldspar is aluminum silicate plus one or more elements. It is the most common constituent of all igneous rocks. All silicate rocks can cause silicosis from dust in the air. For that reason gravel processing should be a wet process. Fibrous rocks like asbestos can cause cancer but they are not Feldspar.

John Hamaker

Can you tell me where I might find an aluminum silicate clay called"old montmorillonite ore" by some; others have called it brecciated rhyolite, a glassy volcanic rock similar in composition to granite. Or diatomite, a mineral made from the calciferous bodies of tiny marine algae. It is used to fertilize crops and is good for livestock.

Tina Tucker
Elk City, OK

J.D.H.: Simon K. Schuster's Guide to Rocks and Minerals says there are deposits of Montmorillonite in Florida, Alabama, Georgia and California. Solaray, Inc., 2815 Industrial Drive, Ogden, UT 84401, puts out Montmorillonite in capsules for internal consumption. I don't know where they get it.

Talking with you about remineralization has given me a new dimension to caring for my apple trees, and I appreciate your comments. Yesterday I contacted the F.W. Whitcomb Company in North Walpole, NH 03608, and actually purchased some rock dust. (160 lbs.). I was told this is a grade from a 200 mesh sieve which 8 - 16% pass through. The rock is granite, and they refer to it as "ledge". It appears to be a fine sand consistency and is black (or probably gray when dry), and it was easy to shovel into grain bags for me.

My question is how this material could be applied, and how much per tree? Should it be broadcast around base of trees by weight or volume, and when is the best time? Thanks for all your information; I hope this process will have beneficial effects.

Howard Weeks
Alstead, NH

J.D.H.: In my experience no single rock type will do what a good glacial gravel mix of all the rocks will do. Whether or not the granite dust will improve the growth of the apple trees depends on whether the soil needs some of the trace elements in granite dust. I would test the effects on plants on a small patch of soil. The quantity to use would have to be found by experiment.

Can you have Hamaker address Ekhart Stoyke's objection to us being in the last 20 years instead of the last 100 years of the Woillard findings? Please keep publishing even if you have to raise subscription somewhat. ***SR*** is covering an area whose time has not yet come, but will soon. The world will scramble to look for "experts" and information, when it becomes obvious to the masses that the planet is in trouble. Hopefully, it won't be too late?

Richard Mitchell
Harrisburg, PA

J.D.H: I'm not familiar with Stoyke's objections. With a species extinction going on I have to conclude that glaciation has already started.

International News
Betsan Coats travels in Nepal

On the way back from Europe, I spent 12 days in Nepal and had some very nice sessions with General Aditya Rana. He is genuinely anxious to improve the lot of his people. He took me to see various people and I could see that he was very popular and very much liked by the labourers, etc., who were pleased to see him, as were VIPs also--secretary to the Minister of Agriculture and others. Unfortunately, he was away in Pakistan, representing the king--he is a "Royal ADC" and I think a cousin of the King--while we were there and only got back 3 days before we left, so it all had to be compressed into 2 days. Hence no country expeditions. He says he has many successful uses of rock dust to show. His house is surrounded with pots, 2 ft. in diameter and filled with tomatoes. He said he would go on having them, due to rock dust, long after they were no longer available in Kathmandu because of the cold.

As we flew in from India, we saw the many deluge tracks coming down the mountains, left by the flooding rivers after the arrival of snowmelt--pure glacier water, overflowing the stream and river banks, the mountains torrent water flooding widely on either side. We were told that when the flooding subsides, the land is particularly fertile. The General is dying to have a grinder. Sadly, Bill Trollope, who is all ready to make the right kind, does not have the finances. Really the whole remineralization program is held up for lack of the right kind of grinder.

Do you know of one that does not break down and need new parts when grinding hard rock? Bill has gone to such a lot of trouble and expense and could manufacture it. He has already spent a lot of his own money, but to get it all going needs $50,000! Compared with all the millions everyone talks about these days, it seems very little.

The Snowballing Plea has gone on snowballing and percolating very satisfactorily. We have had a great deal of feedback from it and very many queries about remineralization to which we have answered with a batch of papers and your ***SR*** address, etc. We have decided to do a fairly far-reaching networking program--sending it out to the many rather worthwhile individuals and organisations which have responded to the *Plea*, plus other new ones. H.H. the Dalai Lama gave us this wonderful message for the *Snowballing Plea,* and Dr. Robert Muller sent us another. They go out with each tape now. The tape has been translated into Hungarian and the script is being networked in Hungary. We do not have the audio-cassette facilities. It is also being translated into Polish and hopefully also into other East European languages. It is being translated into Spanish by Maria Rosa de Gracia in San Rafael, Argentina. We are looking for a Portuguese translator--while our funds last!!!

I still have stalwart help from Janet Weatherbuss and Gail Somers who carried on *Snowballing* while I was away. We are also sending out *SOS--Save Our Sea-life.*

Betsan Coats
Alexandra Headland, Australia

editor: The low cost impact mill on page 21 could be very suitable for General Aditya Rana's purposes to begin with according to new ***SR*** *co-editor Jan Brewer. Jan, by the way, tells me he went to school with General Rana in the 1950's and they later met again in the 1970's when Jan worked on a reforestation project in Nepal. The Harvest Impact Mill could be ideal. It is being used in Ghana currently.*

Ephron Video and literature available in Spanish

I have two farmers experimenting with rock dust in Uruguay and I shall soon start it on my own organic vegetable patch. I gave the report to Dr. Lacaule, our president- elect in Uruguay (he is a farmer) and he showed good interest. The report was published in a Montevideo newpaper and I shall probably give a short TV talk in Maldonado about the subject.

I have prepared a dubbing in spanish of the Ephron video which I will sell at cost.

For the last 16 years I've been busy on macrobiotics and ecology in general (in my own small way) and have translated a number of books so I have correspondents in practically all spanish speaking countries and carry on rather a voluminous mail (each has received the report on remineralization).

Mauricio Waroquiers,
Centro Macrobiotico De Maldonado
Maldonado, Uruguay

English Networking Team

Things have been looking up on the activist front. I have taken materials to the Select Committees for Science at the House of Commons and another set for the House of Lords at the British Parliament at Westminster. The materials are the video, **Stopping the Coming Ice Age**, the books, ***The Survival of Civilisation*** and ***The End,*** and also materials on **Acres, USA,** articles on remineralisation, **Australian Mineral Fertilizer** literature and Betsan Coats trip to Zimmerli. It is impossible to say what the upshot will be, as it all comes down to individuals.

I have been working with an interesting lady called Hilary Nimmo, with whom I have been campaigning about animal rights in the past. She is extremely motivated and helped me to get the remineralisation material to Parliament - ongoing. Eileen Moore is also active with supplying rock powder and is making a most important contribution through her **College of Soil Research**. Last year, Betsan Coats was in London and I was lucky enough to get to meet her. I must congratulate you on your work in getting the video made. I think it is an excellent film, and I feel sure that it will be widely seen in England despite the inborn resistance here to doom watching and prophecy! The message is finally constructive and positive, and this makes it tremendously important.

Mark Fielden
London, England

I am putting together an **Information Pack/Data Base** on S.R. It's strange how these things work out. Here in the U.K. I am getting much more interest in the "super biomin" for taking internally, so I need info on growing, plus info for forestry, plus info for nutrition. It seems never ending. Harry Alderslade and Mark Fielden have been very helpful, and we work as a team, each doing their own thing within the team and without it being "organized". It just happens. I have had contact with Concord Video and Films in the U.K, and they are now the agent for the Ephron video in the U.K and Europe. I am showing the Video to groups and people are very interested. Selling volcanic rock dust as well. Also importing **Superbiomin,** the book and the powder for internal use.

Eileen Moore, College of Soil Research
5 Chase Side Place, Enfield
Mddx., EN2 6QA England

I haven't been able so far to see any definite difference between the forest or lots I treated with stone dust and the forests around. The trees seem to have had some measure of recovery all around that place. But it's quite some time since I last visited the place, and I must return at the next opportunity.

I am not too sure as to what the climate will do, but there is no doubt a lot more energy in the atmosphere as evaporation has increased due to increased greenhouse effect. That will have big consequences, but I feel it is quite impossible to say what the next steady state of the climate will be. As Wallace Broeker has said: most of what will happen will be surprises. The whole thing is highly non-linear, and that makes credible prevision very difficult. It appears to me there is a somewhat better logic in the glaciation theory than in the warmup thesis of the official science. But I cannot really feel sure.

Pierre Lehmann
Société d'Étude de l'Environnement
Vevey, Switzerland

Costa Rica - a perfect place for S.R.

I am writing to you in regards to a project entitled: **Development of Costa Rica's Volcanic Mineral Deposits for Potential as an Income Producing Soil Fertility Amendment.** There is a strong movement in the United States and other progressive agriculturally based countries to restrict, reduce or eliminate the use of petroleum and chemical based fertility inputs. Research and field studies are now in place to support farm systems based on naturally balanced and amended soils. In Costa Rica there are rich deposits of valuable volcanic minerals which are suitable for use as a soil fertility amendment.

A group of businessmen including myself, Greg Stout, have come together to implement a business venture which will remineralize agricultural soil using Costa Rican volcanic minerals. The goal of the project is to enrich, empower and enwealth the country of Costa Rica by developing a presently undeveloped resource in a manner which will be environmentally sound, and produce both U.S. dollars and Costa Rican currency. The volcanic minerals will be utilized in Costa Rica and other agricultural areas. This project will produce many benefits, including income for local and national economies, health benefits and soil fertility benefits. It will give long term sustainability to Costa Rica's agriculture system as well as protect and nourish the environment in the process.

A business proposal is being prepared for submittal in Costa Rica. We would appreciate any helpful information, contacts, ideas, feedback and/or letters of support. We would also appreciate any funding source information, whether Government, private or individual, which might be interested in supporting parts of the project. Please send your input to:

Greg Stout, Principal Investigator
Route 1, Box 124B, Jane, MO 64846 tel.(417)435-2711

Myriad Reflections and "Down to Earth"

Here are some questions, observations and envisionings about rock dust and survival:

- I've appreciated the increased attention our newsletter has placed on bona fide mineral -related services. A thorough review, in book or magazine form, which lists, describes and possibly rates all sources for dust, humus, supplements or services would be a substantial help to many. This volume could also contain information on wise soil management in the use of dust, compost and other amendments as appropriate for different climes and soil conditions.
- Is the time ripe for the "First Annual Soil Remineralization Network Gathering"? Shall we hold conferences on the East and West coasts of America?
- A Soil Remineralization "Extension Service" comprised of local, bioregionally based chapters may be essential for effective global restoration of our precious soil. Services could include erosion control information, education on healthy, living soils, mineral analysis of soil and rock dust and dust sizing assessment. This world-wide service could have a central "clearinghouse" office. It could easily be incorporated into existing governmental agencies in the U.S. and many other nations. Of course, the current awareness level circumvents establishing this type of service, but when our fast growing global consciousness is clear enough, the vision could be acted on.
- If we are indeed in the current Ice Age, which types of technologies, physical and spiritual practices, locations and social conditions would likely insure survival through the freeze and into the eternal "Cosmic Spring" which will follow?

- Is there enough above-ground rock to nourish the earth's soil population indefinitely? (Perhaps at some point, nature will find a way to require less when less is available.)
- How disruptive is above or below-ground mining? Might we examine mining methods and consider trying less invasive alternatives?
- Can Earth's tectonic system function healthfully in a permanent interglacial setting?
- In reducing our energy and resource consumptive ways, how can we best draw the line when choosing alternative technologies which are kind to and appreciative of the earth? In other words, how low-tech must we get to affect the healthy survival of all beings, including human ones?
- How can regeneration of soil and vegetation occur where there is a short supply of available local rock, or in areas where plant growth is not closely associated with the rock minerals aspect of nutrition, such as tropical or desert regions?
- For local enthusiasts, I've found a nearby gravel pit where screenings are available for $7 per ton. **The Society for an Extended Ethic** sent back a prompt and thorough particle sizing assessment on the river rock - "fine sand" as it 's called locally. This is a free service of SEE, which inspired a donation from me. It was found that 10-20% of the material is in the 200 mesh range. I also have a mineral analysis on this fine-sand. There is also straight feldspar available close by. Please contact me at (704) 675-9181 for the specifics. I'm about 50 miles northeast of Asheville, NC. At some point I will see if these mines would consider being listed in our newsletter's "Sources" section. Some experiments with the material and politicking with the owners for low prices, especially the feldspar (which is $120 per ton) is in order first.

The experiments in our raised beds include 3 varieties of rock mix: Straight river-rock, straight feldspar and a mix. Since it has been suggested that incorporating organic matter with the dust is desirable, we used composted horse manure. We'd prefer garden (vegetable matter) compost, but had little available. The results of this experiment will be recorded in writing, photos, and perhaps also video. May we walk the rocky road ahead sure of foot and full at heart.

Michael Kolodny,
PO Box 772, Micaville, NC 28755

Thank you for all your years of effort to aid our ailing planet. I just read your Fall/Winter Soil Remineralization Newsletter. Two suggestions came to me, humbly submitted: On Page 3, in the article on **Making paper without cutting forests,** Dan Hemenway suggests using cane bagesse for paper fiber. Can this cane bagesse be extracted by a means different from the one currently used? Having lived on the island of Maui, where cane is the main industry, I know of an environmental effort there to eliminate the burning of cane, which is the method used now. (Burning cane produces silicone fibers similar to asbestos, causing lung cancer for those who breathe it.) The burning of cane should be obsolete in a few years, because of legislation.

This might make a very big difference on a grass roots level, in this very depleted U.S. of A. "Think globally, act locally".

Elise King
St. Augustine, FL

The newsletter is very excellent. Caroline Wurtz is working at my restaurant and gave me a copy to peruse (Riverside Restaurant in Shelburne Falls). I first heard your name from Steven Uprichard a year ago. He also was working at my restaurant with his wife (and kids!) and at the time sold me a copy of the Hamaker video. We have since then had a public showing of the video at the restaurant, and I have contacted a trucker who is willing to provide rock dust to our town (Buckland) for community access, once I am able to get the local authorities to designate a place to keep it.

Martin Yaffee
Shelburne Falls, MA

From a Letter to Bertram Cohen

I am a Hungarian by birth, American by choice, a refugee scientist from the 1956 Hungarian Revolution, a student of the soil, and an inventor of EKO processing of solid wastes into a man-made humus.

In 1977 I established EKO KOMPOST, INC., built, and have operated a compost (HUMUS) manufacturing ever since. I fully agree with the remineralization of the soil, but my researches also indicate that the reestablishment of microbial life, and eventually the earthworms, should also be considered. Granite dust and/or rhino/bone meal have been added to my EKO since late 1970's. In my lectures I stressed this before I learned Hamaker-Weaver.

Dr. Joseph C. Horvath, Resource Economist
105 Imperial Way, Missoula, MT 59803-2327

Although I have wandered back and forth about how to assess Hamaker's thesis, I am surely aware that something is going on with Mother Earth. Whatever is the true cause of Her health breakdown, there remains the distinct possibility that Hamaker's idea is true even while man's polluting efforts are temporarily raising a counter-trend toward artificial warming of the globe. There is, for whatever reason, no doubt about the remineralization program being effective and necessary.

Steven M. Johnson
Carmichael, CA

I found the information so that I could write to you on the 3rd annual edition 1990 -*Transform, Rejuvenate & Harmonize the Earth No* w resource list that came with the video and book.

Barbara Benson, Tower Hill Farm, Litchfield, MN

Hybro-tite Lost...

We have been trying to locate some rock dust for many years now - the closest we've come is Mark Williams in Arkansas. He evidently is having problems with his grinder, as he has been going to send us some for the past two years. I just called him, and he hopes to be able to send some in the next two weeks. Is there any other source you know of in the Ozarks that would be affordable? We are so anxious to try it. We read a small book by Julius Hensel from a man who used to sell us Hybro-tite. Unfortunately he died, and the Hybro-tite is no longer available. We tried some granite meal from N. Carolina, but according to John Hamaker it wasn't ground fine enough.

We have the book **Survival of Civilization,** and Don's and Mark's earlier articles in T.C. Frip publications - that's when we first became excited. John Hamaker lives rather near us, and has been using something called "clod buster". Is this similar to rock-flour? We know of a source - they also sell something called "Rico Verde". Do you know the value of either of these products? We live near a river that has some gravel, but we are told it would not have many minerals in it. We have no idea how to have it tested at a price we can afford - any ideas?

Rex and Charlene Reyes
Hartville, MO

Hybro-tite Found!

I thought you would like to hear what I learned about Hybro-tite, especially inasmuch as this represents a great opportunity for some enterprising person to make some money. Hybro-tite is no longer being sold; the owner died; his son was not interested in continuing the business. However, by doing

some detective work, I found the granite quarry, the dust by-product of which was sifted to become Hybro-tite. Unsifted sample enclosed, with analysis. I couldn't believe my ears when the salesman told me they were selling this wonderful stuff for $6.80 per ton right now to be used as filler in asphalt paving. What a crime! If you want to contact them: **Gene Rice, Inside Sales, Davidson Mineral Properties, P.O. Box 468, Lithonia, GA 30058(404)482-7231.**

Today I planted green beans for pot tests comparing: a) control, b) old Hybro-tite, c) new granite dust from same source, and d) no rock dust, but composted cow manure. My hypothesis is: Freshness of a hard silicate rock dust IS a factor in its efficacy as a soil amendment. Do you know of any other findings on that subject? I'm holding off sending for your Research Packet until the two new studies are added. If anything significant comes out of this, I'll let you know.

Christopher Nye, Berkshire Community College
Pittsfield, MA -

Mark Williams' New Grinder Design

In the last month I have refined the construction details and come up with an alternative shape that makes it quite a bit easier to build (the original version was such that it would have been tedious to make it strong enough to stand the extremely high pressures it will be utilizing). A volunteer from the network is here to help for a couple of weeks and we are whipping together a "test segment" of the Rotary Grinder, full sized, with which to try out different pressures and other variables before tackling the real thing.

It is extremely exciting, how it is shaping up...looking better and better! It is now quite certain that we can get at least 30 to 50 tons per hour out of a machine no bigger than a medium-sized TV set. The non-stop rotary motion is the key, (compared to the one-batch-at-a-time nonsense that I had been fooling with, which by its very nature was trouble prone). This Rotary Grinder is totally differnt from Hamaker's original rotary design (the one he patented). It uses the Hamaker "rock against rock" process, but is able to operate at a much higher pressure and speed than his old rotary design. Anyway, in a week we will have completed tests on this full sized "test segment", and will then know exactly how well it is going to work. It is definitely a MONSTROUS breakthrough! The "green machine" in the video was great, but this new thing makes it totally obsolete. I'll keep you posted. Several people have expressed unexpected enthusiasm for my video. So, since it cost me only $100 to make, I am proceeding to put together a more carefully executed video. This higher quality video will be given away.

I wasted this last month or two throwing togther a conventional miniature roll mill in a frantic effort to clean up the back orders. I figured a roll mill, although wear prone, would allow me to get the orders out of the way so I could get on with the new Rotary Hamaker design. Not only is a roll mill almost useless for really fine grinding, but the super hard faces were already wearing significantly after just a hundred pounds of grinding. Never again will I build any kind of "conventional" grinder. Now the plan is to use this "test segment" to fill orders.

By the way, the "bargain" grinders that Jan Brewer dug up for you were, well, a bit of a disappointment. I sent for the info....the "$56 Hand Grinder" is actually an unmodified Corona Grain Mill! At least the catalog is honest about the output, "grind enough to do an assay in a few minutes". It takes an ounce or two for an assay, so that is about it. The $550 hammer mill claims 100 pounds an hour or so, but that is the MAXIMUM, with coarse grinding of soft ores, in other words. And the replacement set of hammers (which would be shot after grinding less than a ton of silicate rock) cost over $40. The point is, they are LABORATORY grinders, not meant for production of quantities of dust, but all right for grinding samples of gravel for testing.

Mark Williams, New Earth Products
Route One, Horatio AR 71824
(501) 832-2444

The Healing Clay

I just want to draw your attention to the little book: ***The Healing Clay***, by Michael Abehsera. It was copyrighted in 1977 by Swan House Publishing Company, Brooklyn, NY 11223. ISBN: 0-9182-10-1 (hardcover). There may be some information hidden among the pages that would be wanted for a future issue of SR.

Tom Blose
Cochrantown, PA 16314

S.R. Damage Control?

On December 2nd I attended a hearing on the planned $1.3 billion pulp mill [Alberta Pacific Pulp Mill] on the Athabaska River, that plans to cut 100 km^2 of forest annually. They have asked for 68,000 km^2 =17,000,000 acres to be set aside for this purpose. They intend to use poplar that is growing in that region and reaches harvestable size in 19 years. On this basis they should not require more than 19 x 100 km^2 =1900 km^2 = 475,000 acres, unless they give a damn about reforestation.

If it is not possible to get a moratorium on the construction of this pulp mill, it would be good to get these people acquainted with remineralization that would cut forest usage in half or less. In order to submit a paper pointing out the benefits of rock dust, I would like to ask you for the 15 page report by the Bavarian Forestry Authority that you mentioned in your summary.

Eckhart Stoyke
Restorative Ecological Agricultural Project Society
Box 30, Site 4, RR1
St. Albert, Alberta T8N 1M8

I hope you have not been overwhelmed with mail since the publication of **Secrets of the Soil.** I am an urban gardener learning all I can in preparation for a rural life in the next 2 - 3 years. I would like to know if there is any source of rock dust (as described in Tompkins & Bird's book as azomite or montmorillonite) available for purchase for use in remineralizing farm and garden soil. I don't think grinding my own would be practical at this point. Does Rollen Anderson sell his Azomite?

Rachel Gaia Heyman
San Francisco, CA

editor: For Azomite, see Elemite and Peak Minerals in ***Gravel Source list.***

Gap Mt. Permaculture remineralises

Doug Clayton at Gap Mt. Permaculture, another Newsletter subscriber, and I spread some rock dust on the gardens and orchard at Gap Mt. last spring. A lot of it was coarser than recommended and we haven't been able to measure results. However, we are planning to order more from the Amherst supplier this coming season.

Sharon Devine
Gap Mountain Permaculture
Jaffrey, NH

I've been reading ***The Climate Crisis and Human Survival,*** distributed by Bertram Cohen and I'm very interested in learning as much as I can about our climate problems -- and I believe that it is possible to understand and know enough of the truth about even such complex things as the inter-relationships in our environment. Also, I'd like to

know how we can grind up very large quantities of rocks economically, and has this been done?

It occurs to me that it's very important not to present these matters in an alarmist manner because that tends to invite reactions. I feel that we'll get much better responses from many more people if we simply help them to recognize the truth, otherwise many people will react against whatever is being said before they really listen.

I want to write letters about environmental concerns. If you could help me with where to find names and addresses and information about their responsibilities, interests and attitudes, I would greatly appreciate it.

Robert D. Zubik
Baton Rouge, LA

Dusting out the Fire...ants, that is

Being a fairly recent inhabitant of the south (Louisiana - 1/2 hour from the Gulf of Mexico), I'm just getting used to the climate and flora and fauna. It's a far cry from Canada, which is where I'm from. But, to make a long story short, I'm having trouble composting. There are these lovely creatures here known as fire ants (you'll know why they're called that when one of them bites you - so nice.) I'm sure they have a place in creation, but apparently So. Louisiana wasn't it originally. I heard they came on the banana boats from So. America. Anyway, I don't call it the compost pile, I call it the ant-feeding station. I still put scraps out, as I don't want them in plastic bags in landfill sites. Locals have told me to use diazon (kind of defeats the purpose I think), or hot water and salt. Do you have any suggestions, or can you hook me up with someone who does? Perhaps even a specific design of composter that might discourage them. Any help is greatly appreciated. Thanks for your time. Keep up the good work.

Leslie Plaisance
2209 N. First St.
Golden Meadow, LA 70357

*editor: Try filling a burlap bag with fine rock dust (g 3-400 mesh) and shaking it over ants and compost pile. Wear mask for protection. Write **SR** with results.*

I have received one book on soil remineralization research. I am consulting with some people who are very interested in S.R. throughout the world and in the third world countries. I meet with one or more of these people every week or two. Some have visited and tasted my raw vegetables. All have commented on how sweet they are (and on size and quantity). I do not use any animal fertilizers, etc. I use green manure composted or turned under, gypsum (for calcium), clod buster, other rock dust, kelp (not cooked), dry and liquid, aged black mulch, and earthworms. My best source of books on S.R. and clean culture are from **Health Research**, Mokelumne Hill, CA 95245, and **Acres, USA.** The library does not have this material. [Please let me know] if you have or know of other material to confirm S.R. in a documented research way that will help to influence the above.

Rod Barnes
Hemet, CA

Local Environmental Awareness Group

I am interested in learning all I can about soil remineralization, especially for this area known as the Panhandle of Texas. There are several people here excited about rock dust and desirous of grinding local gravel. My question is: how do we find the correct rock for this area's soil remineralization? I know the consistency must be fine as powder. What and how many trace minerals need be in the contents, and are the contents variable for a given area? In other words, can people go to any area, obtain gravel and grind for rock dust, and it serve the best purpose? And if not, how do we find what is best and where to obtain it? Any information you can supply will be greatly appreciated. We have begun a local environmental awareness group, and have seen the film, **Stopping the Coming Ice Age.**

Lynn Trew
Amarillo, Texas

From Don Weaver I learned about work being done at the U.S.G.S. here in Denver. Dennis Eberl is the man. Supposedly he is working on the use of zeolite minerals to speed the breakdown of "natural rock fertilizers" Apparently he has done some greenhouse experiments. If it would be useful to you I will try to get an interview. As a geologist, I find the idea of a whole new field called agrogeology extremely interesting.

Gary R. Huber
Questar Productions
Denver. CO

I would be interested in a periodic newsletter and news of what's happening on the East Coat area in the way of remineralization efforts, new applications, methods, individual experiences. I am currently networking in my area of Southern California and have been in touch also with Alden Bryant at the **Earth Regeneration Society** in Berkeley, and with Don Weaver at **People for a Future.**

I also know someone with a cherry orchard who has resigned himself to cutting down and destroying his orchard due to an infestation of crown/root gall. He's considering saving possibly a half dozen young trees, and I'm pretty sure I've convinced him to try rock dust with compost/manure. He's seen the video, **Stopping the Coming Ice Age**, and is now very interested in the possibility that this dust might provide the margin of difference that can save his trees, or new trees, from future gall disease. If you have heard of any related experiences by orchardists in your area or the Eastern U.S. it would be greatly appreciated if you could provide me with documentation.

Wayne Kyle
P.O. Box 901171, Palmdale, CA 93590

I'm gardening at three locations with three different friends, with plans to remineralize at all locations. Looking forward to spring planting.

Rob Fultz
Eugene, OR

I am interested in information regarding organic farming techniques, particularly in Hawaii.

Jeff Bryson
1501 Grand St., Apt. B, Alameda, CA 94501

editor: contact Jon Biloon , P.O. Box 891, Captain Cook, HI 96704 for an organic farmer who is also a source for rock dust

I am at present working in a Montessori School, and believe very strongly in exposing our children and their families to caring for our earth. Our school is on 100 acres of land which is also used for a Retreat Center.

As an extension of Montessori and our Retreat Center, we are in the planning stage of beginning organic farming, hopefully leading to Biodynamic Farming.

I have read ***The Survival of Civilization*** by Hamaker, so I was very pleased to read about your **Soil Remineralization News** in **Solstice.**

Sister Mary Michaela
Bethany House
Highland Mills, NY

I have recently attended the *Ohio Ecological Food and Farm Association. Conference*, where I had the pleasure of meeting Prof. David Miller of Oberlin College. I plan to visit

him at the University to see the progress he is making with his studies of rock dusts and produce derived from its use. We discussed the probability that I would help him by using my soil, and available gravel pits here to further the studies. He also suggested I write you, in that I was not alone in my serious belief.

Susan Walker-Meere
P.O. Box 582, Newbury, OH 44065

Dusting our maples

I read with interest an article in the Sugarmaker section of the March issue of **The New England Farmer**, about regenerating the health of maples, which discusses your theory of soil remineralization. It says that you are available for consultation or advice. We have a small, scattered sugar bush on our farm which we are tapping this year after having rested it for the past two seasons. We have several groups of young trees, some old, long established maples growing in what was once pasture, but is now woods. We also have mature trees along the road that are not doing well at all. Our whole operation this year amounts to 300 taps. We ship sap. I'd like to consult with you about your method of helping the trees.

Robert Trask
P.O. Box 157
Londonderry, VT 05148

I would be very interested in hearing more about your research on soil remineralization. I have been interested in maple trees all my life, and last year started applying fertilizer to parts of a woodlot I own where I have released young maples in a sugarbush. The formula I received fro Willie Hendershot of MacDonald College in Montreal. I also distributed this fertilizer to several other sugarmakers in Addisin and Franklin Counties and they spoke of seeing some benefit, though I feel it would be too early to tell the first summer. I would like to receive your information about minerals, so could you put me on your mailing list. Keep up the good work.

Charles Lee
Forestry Services
New Haven, VT

Enclosed is a brochure about **Earth Circle** and what we are doing locally. The "Presenter's Guide" as mentioned in the brochure is basically a script to follow in presenting the video and directing discussion after the video. We are at present (in addition to the projects listed in the brochure) seeking greenhouse space to do pot tests with rock dust. Also, a friend of Earth Circle has developed a program to get high school students to test rock dust. Enclosed is his brochure on the program. We will be actively involved in making this program a reality. Also enclosed is additional info on the Environmental Film Fest. (see page ???)

Doug Crawford
Lakewood, CO

I have just completed reading **Secrets of the Soil**, wherein I came across your name as a resource. Presently, I am planting 1000 douglas fir (pseudotsuga taxifolia) trees on our nine acres. I am adding some bio-dynamics to our organic garden and would like to get clear on soil remineralization.

C. Bevis - P. Hudson
North Bend, WA 98045

New rock dust source in Virginia

I have a 90 acre farm, and am interested in remineralizing it, but there don't seem to be any tested sources of gravel dust in the VA area, or anyone who is applying it. I have recently been in contact with Edmund Redd of Vulcan Materials, and he seems very anxious for me to try their material (He took the place of Cliff Kirkmyer, who is listed in your network.) It is produced as a byproduct of their process of grinding rock to produce a type of sand which works well in asphalt paving. I am enclosing a copy of the analysis he sent me of material from nearby quarries. Apparently, the company has a disposal problem and is accumulating large amounts of the mateal inlagoons. They seem anxious to have it hauled away, and will charge only a nominal price. For two of the quarries, the composition seems similar to the chart from the Encyclopaedia Brittanica, althought it is difficult to be sure since it is given in percentages of compounds, rather than ppm of elements. If you have any suggestions, or know of others who have tried this material, please let me know. Thanks very much.

Gary Via
Rte. 1, Box 305
Quinton, VA 23141

Book Review

From the Ice Age to the New Age

A story of man's inhumanity to the Earth, and its chilling consequences

Title: *The Place Called Attar*
Author: Jerome D. Belanger
Countryside Publications, Ltd.,
Waterloo, WI 53594
186 pages; paperback; $9.95

Attar is a glacial drumlin with a quartzite dome, deposited in what is now Wisconsin by the retreat of the last glacier. The Schmidts are a family who began to farm the land around Attar in the 1920's, surviving two great depressions and radical climate changes into the next millennium. Author Jerome D. Belanger, who has written books on organic farming and animal husbandry, chronicles over four generations the harmonious interaction between the Schmidts and their special hill, in what might appear to be a simple, rather ordinary farming story. But the sweeping range of Benanger's vision places this story against the vast processes of geological eons, and his love and compassion for the Earth herself make of this little book a cry of outrage against the rape and degradation committed by mankind on her body.

More than a protest, it is a compelling warning of the enormous consequences which must attend on our disregard for the planet's well-being, from social and economic chaos to catalcysmic climatic disruptions, culminating in a new glacial age.

The ordinariness of the Schmidt's daily life is counterpointed by the extraordinary descriptions of Attar's long life, from her icy beginnings to the evolution of her teeming microorganisms, her nurturing care for her creatures, and her communication with the dusts, rains and snows brought to her from afar by swirling winds.

Those who care for the Earth will forgive the sometimes plodding prose of the Schmidt's history, for Attar's own voice has the ring of poetry, and they will find in ***A Place Called Attar*** a message of cosmic proportions which must be heard if humanity is to survive its own carelessness. **Janet Scott**

The Network

Subscribers are invited to join the listing, so please let us know so we can include you. Listed once during each subscription time at your request.

Gregory Alexander
50 Billou Street
San Rafael, CA 94901
(415) 459-1681
Building Contractor, organic gardener.

Phil Barnette
Star Rte. 157, Cedar Creek Road
Black Mountain, NC 28711
(704) 669-2814

Jean Bartlett
919 24th Ave. #224
Tuscaloosa, AL 35401

Steve Chamay
RFD #1
Bennington, VT 05207
(802) 823-5606
Caretaking 200 acres of second growth forest. They quit farming (dairy) this land in the 20's so much of the forest is beyond the pole stand stage. Decided not to remove firewood for sale (keep the biomass in the ecosystem). Looking into mushroom production, wildcraft, medicinal herbs, small fruits, flowers and flower essences. Selling spring water. Anxious to try out some stone flour. Need help / collaboration.

James E. Carroll
609 Holly Hill Rd.
Johnson City, TN 37604
(615) 282-5779

Dr. Pierre Cloutier, D.C.
10 Bell
Chateauguay, Quebec J6J 3L8
Canada tel(514) 691 1102
Chiropractor, hygienist, with Earthday organizing public and media viewing of Ephron video, along with sensitization of Hamaker Weaver thesis on local and national levels. Suggestions and ideas welcome. Looking for local sources of rock dust.

Gary Cohen
350 A Crowells Road
Highland Park, NJ 08404
(201) 819-8786
Former research chemist studing literature on climate change. Have been writing analyses on climate issues and sending them to major U.S. environmental groups.

Arne Collen
P O Box 4550
Walnut Creek, CA 94596
(415) 944 1999
Interested in articles to educate the public. Editor of *Journal of World Education.*

James Berry
15368 Mowersville Rd.
Shippenburg, PA 17257
(717) 423-6701
Free cement kiln dust available to pick up.

Robert Dayton
713 W Ave. I
Temple TX 76504
(817) 778 4123

Gary Elder
104 Education Lane
York, SC 29745
(803) 684-0067
I am a ceramic engineer and gardener. My figs flourish with rock dust!

Eddie Filer
Route 6, Box 1850 G
Naples, FL 33964
(813)657-6541
I'm a senior citizen living alone on 5 acres trying to grow as much of my own food as possible. Looking for a source of rock dust in Florida.

Morley B. Forsyth
Box 129
Reston, Manitoba
Canada ROM IX0
A grain farmer with increasing interest in rejuvenating soil. Branching out into market gardening, starting with potatoes.

Gold Mine Natural Food Co.
1947 30th St
San Diego, CA 92102
(619) 234 9711

Golden Pathways
17 Polaris Dr., North Star
Newark, DE 19711
(302) 239-456
I am a health educator, counselor and therapist. We use minerals on a personal basis for healing. Available as speaker on climatic changes and solutions. Plan to distribute rock dust locally.

R.K. Gray
Ngakuru R.D. I.
Rotorua, New Zealand
tel. 32854
Has done extensive testing on S.R. at famous Panorama Gardens.

Arlene Hoffer
15684 Keppen
Allen Park, MI 48101
(313) 386-3741

Robert G. Hoffman
565 Lower Vann Road
Cleveland, TX 77327
(713) 593-1803

Scott Holland
13206 S E 57th St.
Bellevue, WA 98006
(206) 641-4847

Hugh Huntington
P.O. Box 2379
Taos, NM 87571
(505) 776-8347

John Stuart Ivy
14240 S.E. Orient Drive
Boring, OR 97009
(503) 668-5620
Working on healing nut orchards in the Pacific Northwest.

Michael Kolodny
P.O. Box 772
Micaville, NC 28755
(704) 675-9181
I am experimenting on our raised garden beds and hope to do forest/ orchard work with rock dust. I have local dust source contacts. I am presenting the theories and information occasionally as an evening lecture/video/ discussion.

Micro Organic
Management Systems
P.O.Box 1611
Clakamas OR 97015
I am still waiting on an analysis, but I do know there are no harmful metals/ chemicals in rock dust I have ground from old river deposits, 40% 200 mesh or finer. I have some dust available - 50 lb. bags (completely dry) for $3.

Susan Meinke
Products for Nature
23158 Cora
Farmington Hills, MI 48024

Richard Mitchell
7936 Slepian St.
Harrisburg, PA 17112
(717) 657-8655

Eileen Moore
College of Soil Research
5 Chase Side Place,
Enfield, Mddx.
England EN2 6QA
01-363-8615
Set up the College solely to bring **SR** to the U.K. Selling rock dust and books on **SR** in U.K. Networking information to Dietary therapists and growers in U.K., also the media. Importing **Superbiomin** from Austria to sell. Larry Ephron video, **The End** for hire.

April 7-8, 1990 - Two-day Advanced Nutrition workshop in London with Dr Richard Passwater from USA on remineralising people and soil.

Naturopathic Resources
P.O. Box 214
Hamilton, NY 13346
(315) 824-3007

Tom Newkold
3531 Vista Ave. #2
Cincinnati, OH 45208
(513) 321-7316
I am a member of **Midwest Macrobiotic Center**, providing information and access to alternative lifestyles based on natural organic means.

Kurt Nilsson
Blue Mt. Quarry
17701 Big Falls Rd
Whitehall, MD 21161
(301) 343 0500
A manufacture of organic soil mixes, compost and Earthfood rock dust. At Your service call 1-800 634 3002.

Omar!
1402 E. Skyline Drive
Madison, WI 53705-1133
(608) 231-3070
Having experienced the physical benefits of remineralizing my body over the past three years, I now seek to support the remineralization of the earth via international networking.

Marc Ostrovsky
383 Harvard St. #106
Cambridge, MA 02138
(617) 864-9579
200 acre farm, heavily wooded, in Warren and W. Brookfield, MA.

Otto
East Wind Community
Tecumseh, MO 65760
(417) 679-4682
Interests include organic agriculture, permaculture, bioregionalism and the intentional community movement.

Fred Pankratz
P.O. Box 60183
Fairbanks, AK 99706
(907) 479 8941

Permakultur Institut e.V.
Ginsterweg 5
3074 Sleyerberg, West Germany
01149/5264/1012

Dr. Michael Pimbert
ILRISAT Legumes Program - Andhra
Pradesh - Pakanchern P.O 502 324
India

Leslie Plaisance
2209 North 1st Street
Golden Meadow, LA 70357
(504) 475-6664

Joanna's Bulletin Board

This is an ***SR*** wish list- ways readers can help expand the newsletter.

See the Rock Dust Reference Form Next Page

SR wants to build a reference list on different rock sources. ***SR*** wants to know the results you've gotten from gravel/rock dust materials. Please refer to the form on the next page in order to help us standardize our results. In time with your help we'll know the best rock sources. It might be helpful to photocopy the form in a larger size than shown. Any comments on how to improve this effort?

Research Packet

SR needs clerical, and possibly technical, help to improve the research packet. This is a collection of scientific and technical reports that ***SR*** sends to interested parties. It is important that the research packet is clear and sufficiently organized that researchers can use its format to find what they need. If you are interested, please send a letter and let ***SR*** know your interests, background, availability and credentials, if pertinent. Thanks!

Bruce Rogers
3956 Fuller Ct.
Boulder, CO 80303
(303) 499-2978
Rock dust source - The Boulder Co.

Rolling Knolls Farm
HCROI Box 68A
Leopold, MO 63760

Judy Roylance
Rt. 1, Box 1398 , Dogwood St.
Sag Harbor, NY 11963
(516) 725-1009
Distributor of a rock dust product- a pelletized, gypsiferous shale. At an application rate of 150 lb. per acre, it is a convenient and economic alternative. I will ship anywhere.

The Sprout House
40 Railroad Street
Great Barrington, MA 01230
(413) 528-5200
Sells **Indoor Vegetable kits** and sprouters, organic seeds, health books, juicers, food dehydrators, water filters and more.

Charlotte L Suhr
4702 E Maripose Sr
Phoenix AZ 85018

Gary A. Via
R.R. 1, Box 305
Quinton, VA 23141
My family of 4 lives on a 90 acre farm (20 acres open) with a large organic garden, small fruit orchard, and aspirations of starting a small livestock operation.

Matt Vooro
2260 Britannia Road, R.R. #3
Campbellville, Ontario
Canada L0P 1BD

Mauricio Waroquiers
Centro Macrobiotico de Maldonado
Sarandi 672, Maldonado
C.P. 20000, Uruguay
Tel: 2 18 84

Additional small-scale grinding equipment from Jan Brewer, Con't

Bico Inc.,
P.O. Box 6339
,Burbank, CA 91510
(818) 842-7179 (213) 849-2179

Sieves W.S. Tyler, Inc.,
P.O. Box 8900,
Gastonia, NC 28053-9537
(800) 238-9537

Abundant Life Seed Foundation
Box 772,Port Townsend, WA 98368
(206) 385-5660 Catalog $2.00

Keene Engineering, Inc.
9330 Corbin Ave.
Northridge, CA 91324
(818) 993-0411

Catalog F

Order # A-53 Mortar & pestle, 1 pint $27.95
Order # A-71 Mini-mortar & pestle, 1/2 pint $15.95
Order # RC-1 Pilot Mill, 1" rock to 200 mesh. 5 h.p. gas engine $795.00 (about 500lb./hr. to 200 mesh)
Order # RC-46 Rock crusher & roller mill, 9 h.p. gas engine, trailer mounted. $4395.00

About 2000 lb./hr. to fine dust. (Don't know if all will be 200 mesh).

editor: *All grinders suggested here are for small scale application such as pot tests or small plot tests, not for grinding large quantities.*

Rock Dust Reference Form

Please print or type. You may include more information than what we outline below, but *SR* requests that your initial information follow this format and help us develop your information.

*Date*_____

*Name*_____

Street or P.O.Box _____

*City, State, Zip*_____

*Telephone number*_____

Rock/gravel source used:
Description of rock/trade name (include fineness, if known) :

location, desc. of native rock:

color of material:

Price of material used:

Date purchased:

Name, address and tel no. of source used:

Soil type (clay, sandy, other)
heavy medium or light soil? Drainage?

Type of Plants Grown:

Application rates of gravel/stone dust applied:

Application method:

Weather conditions during year(s) of growth [if more than one year, please duplicate form and include for other years]

Yields , size of plants
better, same, worse? How much?

Photographs? Please take and send if possible

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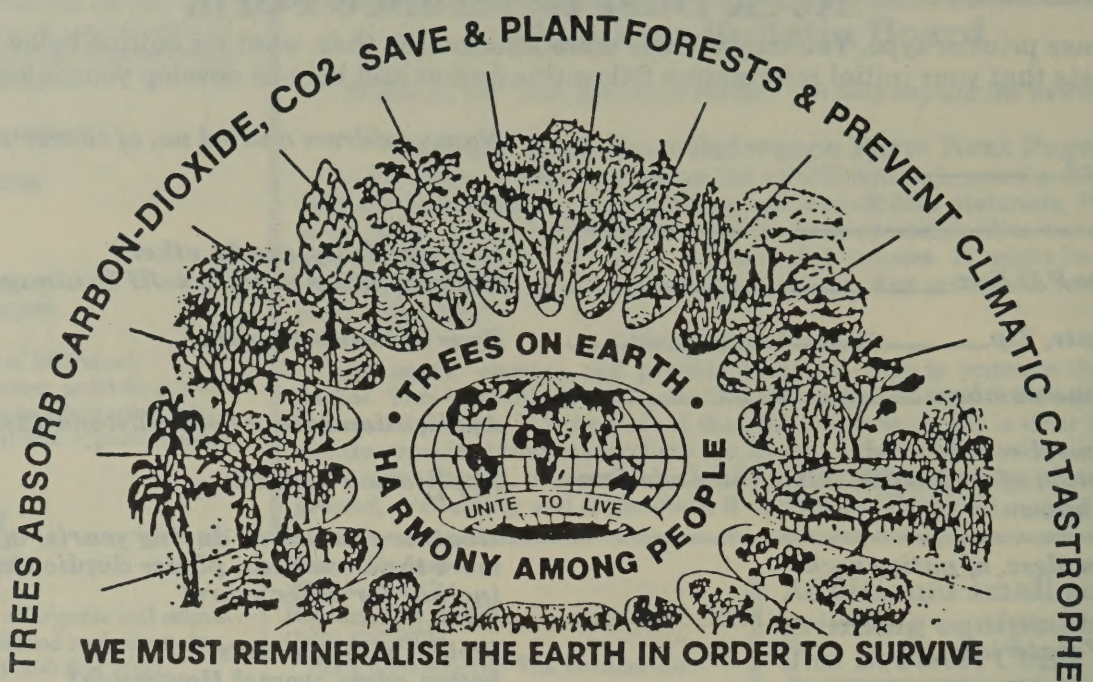
Name_____ **Phone**_____

Street/Box_____

City_____ **State**_____ **Zip**_____

Would you like to be part of The Network Listing? Yes____ No ____
A brief description:

***(Foreign checks in U.S. dollars must have ABA routing number, but bank charges are excessive. Postal Money Order in $U.S. preferred.)**


TREES ABSORB CARBON-DIOXIDE, CO2 SAVE & PLANT FORESTS & PREVENT CLIMATIC CATASTROPHE
TREES ON EARTH
UNITE TO LIVE
HARMONY AMONG PEOPLE
WE MUST REMINERALISE THE EARTH IN ORDER TO SURVIVE

With a natural mixture of finely ground river, sea-shore and glacial gravel, forests and soils are remineralized and regenerated. Remineralization strengthens growth and resistance to pollution and acid rain in trees, invigorates all plant life and greatly increases the nutritive value in food.

Hamaker Coordination

Information concerning remineralizing the soil is organized on a voluntary basis. We can all help to save our Earth- Photocopy and send to your friends.

Soil Remineralization
A Network Newsletter
Joanna Campe, Editor
152 South Street
Northampton, MA 01060 U.S.A.

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